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HAND-BOOK

OF

SKIN DISEASES.

BY

DR. ISIDOR NEUMANN,

DOCENT AN DER K. K. UNIVERSITÄT IN WIEN.

TRANSLATED FROM THE SECOND GERMAN EDITION, WITH NOTES,

BY

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TO

DR. H. D. BULKLEY,

LATE PRESIDENT OF THE NEW YORK ACADEMY OF MEDICINE,

ONE OF THE FIRST TO STUDY AND LECTURE ON

DERMATOLOGY IN THIS COUNTRY.

THIS TRANSLATION, WITH ITS NOTES,

IS AFFECTIONATELY DEDICATED

BY HIS SON.

TRANSLATOR'S PREFACE.

THE translator is well aware that a hand-book on Skin-Diseases, in the English language, must create for itself a position, if it would successfully compete with the books on the subject already before the profession by Wilson, Fox, Anderson, Hillier, Squire, and many more, which now have a wide circulation, and might seem to preoccupy the field. But the work here presented must claim attention from the large amount of scientific investigation condensed in its pages, not to be found elsewhere; while it is hoped that the notes, by their practical bearing, will make it a useful text-book for students and practitioners, embracing, as they do, the most recent results of English, French, and American experience. The progress in the study of cutaneous affections has been very great during the past quarter of a century, new and able books constantly appearing, each adding to the knowledge of the subject, by bringing to bear the advances of modern science upon the investigation of this branch of general medicine.

The first volume of HEBRA'S treatise, published in 1860, was not given to the English world until the appearance of a portion of it in 1866, and the remnant in 1868, under the auspices of the New Sydenham Society. The circulation of this was necessarily limited. The second volume is now under way by Hebra's assistant, MORIZ KÖHN, the first section of it having appeared, in *German*, last year. This masterly work

created a great stir in the dermatological world, both by its exceedingly clear descriptions of the maladies treated of, and by its bold denunciations of the prevailing practice of regarding Skin-diseases as constitutional affections, and by directing the attention very especially to the local appearances as presented to the eye. He and his school have done much to advance this branch by original investigations, and are rightly considered foremost in the study of dermatology, the opinions emanating from this source having influenced the views as well as the practice of a large part of the professional world.

Dr. Neumann was for many years Hebra's assistant, and has since been connected with the same hospital as Lecturer on Diseases of the Skin, and has had abundant opportunity, as he states in the preface to the first edition of this work, to prove and confirm the principles laid down by Hebra, and which are adopted by him as the basis of his work, which may therefore be considered as a fair exponent of the German practice of dermatology. The large size and cost, together with the incompleteness of the English edition of Hebra's treatise, will render the present compendium much more acceptable to the American profession. Its reception in Germany may be judged, from the fact that the first edition, of fifteen hundred copies, was exhausted within one year after its publication.

The plates in the American edition are photographic copies from the original, and introduce us to a new method of the study of these affections, that is, a careful consideration of the microscopic anatomy as the true basis of understanding pathological lesions, without which knowledge, treatment must be founded on empiricism. It has been remarked to me that the book was ahead of the times, that the American student is not accustomed to study diseases from this stand-point. I shall be glad, indeed, if I have assisted in placing the study of dermatology upon a higher level; it is certainly better to be in advance of the age than at all behind it.

I am very sorry that my convictions, based on dispensary and private practice, together with that observed in the public institutions of London and Paris, as well as a careful study of the English, French and German literature, have led me to differ greatly from our author in many points of practice. However, this difference is in point of practice alone, for I believe Dr. Neumann gives the most correct, as well as the newest views and discoveries in the history, etiology, histology, and pathology of these diseases. We can by no means subscribe to the statement on the 56th page, which is an index to the plan of treatment advised in the whole work, namely: "We place by far the greatest value upon external treatment." This difference of opinion will, I think, appear abundantly in the notes appended.

It has also been thought, by some, that the book was a scientific one, and should remain so; consequently, that notes as to treatment were uncalled for. To this it may be objected that American students, as well as the profession at large, need scientific books which are at the same time practical; they need books which, while placing before them the true nature of disease, tell them also how they can cure it. In making the notes, I have used freely the books bearing on the subject, new and old, which were at my command. Some of those which are less known I have named at the time; the others, and the editions, will be found in Appendix E.

I have given the views of many different observers, not mentioning their points of agreement as much as their differences, and this not to obscure the subject, but to give a comprehensive view of dermatology as found in no other work. Space would not permit me to make use of the literature found in the journals; moreover, I preferred to give none but well-established points. The synonymes which I have introduced, and the very compendious index, will, it is hoped, be of service in giving an understanding of the whole subject, and more

than take the place of the glossary of cutaneous terms affixed to some books.

I have taken the liberty, during the absence of my father, in Europe, to introduce a number of his cases, and to give his opinions on some points, as well as some formulæ much employed by him; if there are any errors in these, they are therefore mine. My thanks are due and are tendered to my friend Dr. Frank P. Foster, for his article, found in Appendix A, on Vaccination, to which subject he has devoted considerable time and thought. I have also to thank Mr. W. F. Mittendorf, pharmacist, for his assistance in rendering into English equivalents many of the German formulæ.

42 EAST 22D STREET, NEW YORK, *September*, 1871.

PREFACE TO THE SECOND GERMAN EDITION.

THE first edition owed its success principally to the fact that it supplied a want which was greatly felt. This favorable reception has served to encourage me to proceed in my work, and to complete what was lacking in the first edition, by the addition of new material, and by revising the different divisions.

The description of the senile alterations, as also the articles in reference to diseases of vegetable parasitic origin, will, I think, be acknowledged to be valuable additions.

I have also increased the number of the woodcuts; the new drawings as well as the old are the excellent productions of Dr. Heitzmann.

It is trusted that this edition will merit as favorable a reception as the former one.

DR. ISIDOR NEUMANN.

VIENNA, *July*, 1870.

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DISEASES OF THE SKIN.

INTRODUCTION.

It is no easy task to make a correct account of the literature of cutaneous medicine, owing to the confusion which has existed in the nomenclature of this branch from the very oldest times to the present. We find attention paid to diseases of the skin in the writings which come to us from the period of greatest antiquity, especially in those of the Greeks, Egyptians, and Jews; but it is not always possible to fix to the diseases described their proper position in modern dermatology. Thus, in the Pentateuch (third book), various affections of the skin are portrayed with great minuteness; but we can recognize only burns, tumors, and diseases of the scalp and beard, with any probability; while we are uncertain if *lepra* (*elephantiasis Græcorum*) is meant by the term *Zaraath*, and also whether *Shechin* indicates favus, small-pox, or other quite different diseases.

Passing allusions to the anatomy of the skin, especially as to the nature of the hairs, epidermis, and cutaneous glands, are found as early as in the works of POLYBUS ("De Natura Pueri").

HIPPOCRATES (450 B. C.) is to be considered as the founder of Grecian dermatology. Some names used by him are still employed: for instance, exanthemata (ἐξάνθημα, efflorescere), as a general designation of skin-diseases; anthraces, phymata (boils, small-pox?); erysipelas; psora (for every itching disease, including eczema, scabies, prurigo); *lepra* (scaly eruptions); herpes, etc., although some of them now represent quite

different diseases. By the term madisis, Hippocrates designates the falling out of the hair in consequence of age; by alopœcia, the same when occurring from disease. All affections of the skin are, according to him, either local diseases, or general, and caused by morbid humors; lepra, psora, and lichen, are the skin-diseases especially known to him, of which lichen represents a milder, lepra a more severe disease. Herpes was used partly for those cutaneous affections which form more or less regularly-arranged efflorescences, partly for lupus (*Herpes esthiomenos*), and also for wheals. By ecthyma, HIPPOCRATES designates an eruption which appears in the form of pustules—possibly small-pox was meant. We find also the names phlyctænæ (*φλυκταινίδες*), hydroa, and pomphoi, in the writings of HIPPOCRATES.

CORNELIUS CELSUS (25 A. D.) added but few to the terms already used by HIPPOCRATES. He paid especial attention to the external form of cutaneous affections, and studied chiefly single diseases, as carbuncle, anthrax, carcinoma, theriom (*Herpes esthiomenos*), papulæ (eczema, lichen), pustulæ (giving four varieties: *a*, from sweating and nettle; *b*, with various colored contents and ulcerated base; *c*, hard pustules (*φλυζακιον*) pointed, with pustular or ichorous contents; *d*, dark or light colored pustules with a strongly-inflamed base and circumference, ulcerating, and arising from cold, heat, or medicinal applications), scabies (corresponding to the psora of HIPPOCRATES), sycosis, varus, and vitiligo; the designation "Impetigo" was used for efflorescences of the face. He distinguishes two kinds of papules; the following is the explanation: "Altera est, in qua per minimas pustulas cutis exasperatur et rubet, leviterque roditur, altera autem est, quam ἀγριαν, i. e., feram Græci appellant." Thus he makes no difference between pustules and papules. The names favus and porrigo are used both for dry and suppurating eruptions of the scalp; by sycosis he designates ulcers on the hairy skin of the face and head; and by area the falling out of the hair in the form of circles or serpentine lines. Varus and acne are identical; elephantiasis, leuke, and alphos (*vitiligo*), are also treated of by CELSUS.

PLINY (32 A. D.) describes fully the mentagra, which was

brought from Asia to Rome, spread by the kiss, and which had attacked a large part of the people. It commenced on the face, and spread over the neck, breast, and arms, and is not, therefore, synonymous with mentagra, as we now designate it. Herpes zoster was also alluded to by PLINY, and more fully discussed afterward by SCRIBONIUS LARGUS DESIGNATIUS (43 A. D.).

GALEN (131–201 A. D.) only recapitulates what was already known to HIPPOCRATES and CELSUS, but he uses the term pustulæ also for exudations in the internal organs, and febris pemphigosa for various forms of pustules of the skin; he divides diseases of the skin into such as affect the scalp alone, and those affecting the rest of the body; he details a part of the clinical history of herpes and elephantiasis, and mentions certain remedies which are useful in achor, erysipelas, lichen, varus, and sycosis (“De Ficosis Tumoribus”).

ÆTIUS OF AMIDA (543 A. D.) is the first who uses the name eczema (ἐκζεω, to boil over) for eruptions of vesicles and pustules, and especially for such as cover the whole surface, and are accompanied by heat and pain, while PAULUS AEGINATUS uses this term for pustules without pus. He describes also psoriasis, although under a different name.

CÆLIUS AURELIANUS, ALEXANDER TRALLIANUS, and JOHANNES ACTUARIUS, only repeat what was known before.

The old Indian school of medicine supposes that diseases in general as well as those of the skin have their origin in the three cardinal principles, air or ether, bile, and mucus. Alopecia, scald-head, nettle-rash, pimples, ulcers, small-pox, lepra, and abscesses, were described.

In Arabian medicine we find recorded the observations of Roman and Grecian historians above mentioned; the preparation of medicines forms notably the chief subject of Arabian medical science. Still it does contain descriptions of small-pox (RAZES, 850), measles, elephantiasis, alopecia, vitiligo, and impetigo. AVICENNA (980) mentions the malignant pustule, ichthyosis, favus (*sahafati sicca*); he pictures clearly prurigo under the name of impetigo, describes pemphigus and rupia, and bears the same relation to Arabian medicine that GALEN does to Roman. AVENZOAR (1162) speaks of the

Acarus Scabii. Until the fourteenth century the teachings of the Arabian writers were everywhere followed.

MANARDUS ("Epistolæ medicæ," Lutetiæ, 1528) first used the word *lupus*, but only for ulcers on the leg. J. GORRÆIUS ("Parisiens. Definitionum Medicarum," Frankfort, 1578) describes *acne*. J. FERNELIUS AMBRANIUS (Francoforti, "De Externis Corporis Affectibus," 1592) mentions *syphilis*.

During the thirteenth and fourteenth centuries most of the writers occupied themselves with the description of leprosy; and as this disappeared and was confined more and more to the maritime countries of Europe, *syphilis* appeared, as is known, in the fifteenth century (in the year 1492), while the French occupied Italy, and attracted the attention of all writers, from its rapid spread and the great destruction which it made in the skin and bones. The authors who flourished at this period (1490) are, MANARDUS, NICOLAUS, FLORENTINUS, AMBROSIIUS PARÉ, and ASTRUC, who treat principally of *syphilis*.

* GUY DE CHAULIAC describes also *tinea*; the description, however, is more applicable to *impetigo*, *eczema*, *sycosis*, or *favus*; he mentions the contagious nature of *scabies*; VIDUS VIDIUS (1569) describes *varicella*; FERNELIUS (1497) *lentigo*, *pustula*, *syphilis*; FORESTUS (1522) *pemphigus* and *scabies*; SCHENCK the diseases of the hair, *sycosis*, and *lichen*; SENNERTUS the pigmentary changes of the skin, liver-spots, offensive sweating of the feet, scarlet fever, measles. DORING (1619) furnishes an accurate description of scarlet fever.

In the sixteenth, seventeenth, and eighteenth centuries, *scorbutus* chiefly was described by writers; and we then find undoubted descriptions of scarlet fever, *petechiæ*, *typhus*, *varicella*, and especially *favus*.

In the year 1572, MERCURIALIS wrote a large book ("De Morbis Cutaneis ex ore H. Mercurialis," Venetiis, 1601), which again presents the observations of earlier physicians; it was published by his pupil, PAULUS AICARDIUS, in Venice. He separates diseases of the scalp from those of the rest of the integument, and treats especially of *impetigo*, *scabies*, *psora*, *lichen*, *pruritus*, and *favus*.

HAFENREFFER ("Nosodotrium in quo Cutis eique adhærentium partium affectus omnes traduntur," Tübingen, 1630)

speaks especially of small-pox, roseola, venereal diseases, and comedo; WILLIS (Amsterdam, 1682) considers diseases of the skin as they are or are not accompanied with swelling. Moreover, we find small treatises by SEVERINUS, FELIX PLATER, MUSITANUS, DE HÆN, AMBROSIUS PARÉ (1517-1536), VAN SWIETEN (1773).

D. TURNER ("Lectures on Diseases of the Skin," London, 1766) presents partly his own, partly the observations of others, and gives notes especially on herpes, anthrax, and nævus.

LORRY ("Tractatus de Morbis Cutaneis," Paris, 1777) is incontestably the most prominent of the writers yet mentioned. From investigations made on the healthy and diseased skin, he came to the conviction that its diseases were either idiopathic or symptomatic. He also noticed the depuratory character of the skin, and the dangers which attend the sudden removal of an eruption; he mentions the injurious influences which various temperatures, foods, drinks, labor, and rest, exert upon the skin.

PLENCK ("Doctrina de Morbis Cutaneis," Vienna, 1783) divides skin-diseases into fourteen classes, with especial reference to the form of the pathological product.

ROBERT WILLAN'S work ("Description and Treatment of Cutaneous Diseases," 1798) makes, without doubt, the greatest epoch in the history of cutaneous medicine, both as to the nomenclature and treatment of skin-diseases, and also the knowledge of the works already published: the descriptions of single diseases are given with a rare skill, and the nosology is simplified. WILLAN followed PLENCK'S system, with the difference that the latter lays down fourteen classes and one hundred and twenty species, while the former at first gave seven classes and thirty-five species, and afterward nine classes with forty-nine species. WILLAN was unable to complete his work himself; it was consequently edited by his pupil, Bateman, in a slightly altered form ("Practical Synopsis of Cutaneous Diseases, according to the Arrangement of Dr. Willan," London, 1815).

LORRY'S works were soon followed by others in France, as, RETZ ("Des Maladies de la Peau et de celles de l'Esprit," 1790); DE ROUSSEL ("Diss. de Variis Herpetum Speciebus"); POUPART ("Traité de Dartre"); BOISSIER DE SAUVAGES

(*"Nosologia Methodica sistens Morborum Classes juxta Sydenhami mentem et Botanicorum Ordines"*); the most important works, however, are those of ALIBERT, BIETT, CAZENAVE, and SCHEDEL.

ALIBERT created a natural system, which, however, few followed. His first work appeared in 1810, under the title *"Précis théorique et pratique sur les Maladies de la Peau,"* Paris.

CAZENAVE and SCHEDEL gave the lectures of BIETT, as he himself published but little, under the title *"Abrégé pratique des Maladies de la Peau,"* fourth edition, Paris, 1847; they follow therein WILLAN's system, and give principally the therapeutical experiences of BIETT.

Among the later, and in part still active French dermatologists, may be mentioned:

M. GIBERT (*"Traité pratique des Maladies de la Peau,"* deuxième édition, 1840); RAYER (*"Traité des Maladies de la Peau,"* Paris, 1835); CHAUSSE (*"Traité élémentaire des Maladies de la Peau,"* Paris, 1854); A. CAZENAVE (*"Leçons sur les Maladies de la Peau, Pathologie générale des Maladies de la Peau,"* Paris, 1856); HARDY (*"Leçons sur les Maladies de la Peau,"* Paris, 1858); DUCHENNE-DUPARC (*"Compendium des Maladies de la Peau et de Syphilis. Traité pratique des Dermatoses,"* Paris, 1859); ROCHARD (*"Traité des Maladies de la Peau,"* Paris, 1860).

Dr. E. BAUDOT (*"Traité des Affections de la Peau, d'après des Doctrines de M. BAZIN,"* 1869).

Dr. CH. CAILLANTS (*"Traité pratique des Maladies de la Peau chez les Enfants"*).

E. BAZIN (*"Leçons théorétiques et cliniques sur les Affections cutanées,"* etc.).

The following are prominent among English writers:

M. S. PLUMBE (*"Practical Treatise on the Diseases of the Skin,"* London, 1837) divides cutaneous diseases into local (acne, sycosis, porrigo), and constitutional, dependent on the state of the blood-vessels (purpura, ecthyma); GREEN (*"Practical Treatise on Diseases of the Skin,"* London, 1835); THOMAS HUNT (*"Practical Observations on the Pathology and Treatment of Certain Diseases of the Skin,"* London, 1847); NEL-

GAN ("Practical Treatise on Diseases of the Skin," Dublin, 1852); ANTHONY TODD THOMPSON ("A Practical Treatise on Diseases affecting the Skin," completed and edited by Edmund A. Parkes, London, 1850); ROBERT J. JORDAN ("Skin-Diseases and their Remedies," London, 1860); ANDERSON ("A Practical Treatise upon Eczema," London, 1863).

ERASMUS WILSON ("On Diseases of the Skin," London, 1867).

FOX ("Skin-Diseases," London, 1864).

HILLIER ("Hand-book of Skin-Diseases," London, 1864).

HOWARD DAMON ("Lessons on the Structure of the Skin," Philadelphia, 1868).

MCCALL ANDERSON ("On Parasitic Affections of the Skin, Eczema, Psoriasis," London, 1868).

RAYER, CHAUSSE, DEVERGIE, ERASMUS WILSON, and ANDERSON, have arranged their systems not so much with reference to the external form, as to the nature of the disease and the structure of the organ.

The following are of leading rank among the German writers on skin-diseases:

PLENCK ("Doctrina de Morbis Cutaneis," Vienna, 1776); D. TURNER ("Abhandlung von den Krankheiten der Haut," 1766); V. A. RIECKE ("Handbuch der Krankheiten der Haut," Dresden, 1841); JOSEPH FRANK ("Die Hautkrankheiten, übersetzt von Dr. Ch. G. Voigt," Leipzig, 1843); STRUWE ("Uebersicht der Hautkrankheiten," Berlin, 1829).

BEHREND ("Monographische Darstellung der nicht syphilitischen Hautkrankheiten," Leipzig, 1869); FRORIEP ("Abbildungen der Hautkrankheiten"); VEIEL ("Grundzüge der Behandlung der Hautkrankheiten an der Heilanstalt zu Canstatt," 1840, 1852, 1853, 1854, 1862); PETER FRANK (1792, "De Curandis Hominum Morbis"), who divided skin-diseases into acute and chronic, also into idiopathic and symptomatic; SCHÖNLEIN, who retained this division, and discovered the fungus in favus; C. H. FUCHS ("Die krankhaften Veränderungen der Haut und ihrer Anhänge," Göttingen, 1840. Versuch einer ganz neuen Nomenclatur); GUSTAV SIMON ("Die Hautkrankheiten durch anatomische Untersuchungen erläutert," Berlin, 1851), who enters more into the pathological changes in

cutaneous diseases; ROSENBAUM and STRUWE, who give only a systematically-arranged nomenclature; v. BÆRENSPRUNG, who, besides other treatises, published the following: "Anatomie der Hautkrankheiten, die Hautkrankheiten, 1. Lieferung, 1859, Herpes Zoster, Pemphigus;" A. KLEINHANS ("Compendium der Hautkrankheiten," Erlangen, 1866 — "Die parasitären Hautkrankheiten," Erlangen, 1864).

Among the Norwegians BÆCK and DANIELSEN stand prominent ("Traité de la Spedalskhed"). Lately the investigations in the province of dermatology have been recorded in special journals which appear periodically; more especially in Germany, England, France, Italy, and America.

Since the year 1840 HEBRA has been making known the principles of the Vienna school, both by writings in the various journals of this and other lands, and by means of his lectures, which have been attended by students from all quarters of the globe; and his views have deservedly found adherents on every hand. In the work still under press, "Handbuch der speciellen Pathologie und Therapie der Hautkrankheiten," of which the first part has appeared, he presents his observations and experiences.

He who is but superficially acquainted with the above-mentioned works will surely know how to appreciate the simplified nomenclature and clear logic of HEBRA, his gift of observation, his precise indications for the employment of appropriate remedies, which were in part already in use, and in part were first introduced by himself. The advances in pathological anatomy, for which we are indebted to such men as ROKITANSKY, VIRCHOW, HENLE, WEDL, and WEBER, have also exerted a beneficial influence on dermatology.

We have thus mentioned the more important works which from antiquity to the present time have laid the foundation of this branch of medical science, and aided in its advancement.

The study of dermatology has been very materially assisted of late by the use of good microscopes; in place of simple conjectures about the morbid humors which, perhaps, were present, this instrument has brought us a clear explanation of the essence of many cutaneous diseases. The *acarus scabiei*, which, it is true, had been already mentioned by AVENZOAR as the

cause of the itch, and in the year 1683 by BONOMO in a letter to REDI founded upon the assertions of CESTONI, was, however, again forgotten; and the labors of HEBRA, EICHSTEDT, GUDDEN, BOURGUIGNON, GERLACH, and FÜRSTENBURG, were the first to shake completely the teachings of HAHNEMANN and AUTENRIETH, which are yet held concerning the metastasis of scabies. GUSTAV SIMON found the *acarus folliculorum* in the sebaceous follicles, SCHÖNLEIN discovered the *achorion* in favus; MALMSTEN the *trichophyton tonsurans* in *herpes tonsurans*; BAZIN the *microsporon mentagraphytes* in sycosis; MEISSNER the parasite of the nail in *onychomykosis*; KÖBNER the fungus in *eczema marginatum*. The anatomical investigation of the skin also soon rendered certain appearances intelligible; we need mention only the discovery of the sebaceous glands by MALPIGHI, that of the sudoriparous glands by ROUSSEL DE VAUZÈME, the studies by HENLE and WENDT on the structure of the *epidermis*, those by BERRES and VOHMANN concerning the division of the blood-vessels, the discovery of the *sensation corpuscles* and the manner of attachment of the Malpighian corpuscles with the tissue of the skin by MEISSNER, and the discovery of the muscular fibres around the hair-follicles by KÖLLIKER.

The skin has also been more closely studied as a physiological organ, especially as the organ of sensation and perspiration. Thus it is proved by ABERNETHY that the hand, plunged in carbonic-acid gas, absorbs more than 6.25 cubic inches of it in an hour. Experiments on lower animals show that the absorption of noxious gases through the skin suffices, in a short time, to put an end to life. Sparrows immersed in carbonic acid, with the head protected, died in one and a half or two hours; rabbits, in sulphuretted hydrogen, in ten minutes. The importance of the skin, as a perspiratory organ, has been placed beyond doubt by the experiments of COLLARD DE MARTIGNY, CHAUSSIER, NYSTEN, MADDEN, GERLACH, FOURCALT, DUCROIS, BECQUEREL, BRESCHET, MAGENDIE, GLUGE, and others. The absorption of fluid-material by the skin is shown by painting it with tar; for, when even one-third of the surface of the skin is thus covered, the urine is dark-colored. The absorption of common salt and iodide of potassium is likewise now undoubtedly proved. The inunction-cure also depends essentially on

the absorption of metallic mercury by the skin, and experiments which OVERBECK made on dogs gave globules of quicksilver clearly in the kidneys and liver. The catalogue of names would be very much increased if we should enumerate all the single works before us. The Vienna dermatologists would certainly be by no means among the last, for the labors of ZEISSL, WERTHEIM, REDER, BIESLADECKI, AUSPITZ, PICK, MORITZ KOHN, and others, have contributed essentially to the enrichment of dermatology. Faithful to our task to introduce into the compass of this book each work relating to our doctrine, provided it be in some degree worthy of regard, we will endeavor to do justice to authors in subsequent chapters.

M. EDENHUSZEN, under KRAUSE's guidance (*Zeitschrift für rationelle Med.*, I. Band), instituted some experiments on cutaneous transpiration, by covering the surface of various animals with an impervious coat of gum-arabic, varnish, or paint. His object was to ascertain how large a surface must be left free in order that the animal may not die at once. The results of his investigations are essentially as follows:

When the body is completely covered, the duration of life depends in general upon the size of the animal, if of normal strength. If more than $\frac{1}{3}$ — $\frac{1}{2}$ of the surface is covered, rabbits die with acute symptoms. The more that is left free, the longer is death deferred; the phenomena are the same, only they make their appearance more slowly; in every case the respiration was most affected, there being dyspnea. A complete covering produces other symptoms of disease—great restlessness and trembling, paralysis, tonic and clonic spasms, and apathy, occur; and to these are added increased secretion of urine and the appearance of albumen in it.

If a small portion of the skin is coated several times, there shortly appears a redness, and abscesses are formed. By examining such parts more closely, we find numerous crystals of the triple phosphate, which are also found in the peritonæum of those animals which have died. In these experiments, the places of the skin left free were tested with hæmatoxylin-paper, and the secretion shown to be a volatile alkali. Since, also, in the blood of the animals used, ammonia appeared to be present in more than normal abundance, from this we conclude that a small quantity of nitrogen is secreted by the skin in the healthy condition; but it is doubtful if this appears in the form of ammonia. When the excretion of the nitrogen is hindered, it accumulates in the blood, gives rise to the well-known symptoms, and determines also anatomical changes which can be recognized in the body after death, hyperæmia of the brain, lungs, liver, spleen, and kidneys, effusions into the pleural and peritoneal cavities, into the pericardium, and subcutaneous cellular tissue; and occasions also considerable ecchymoses in different parts of the mucous membrane of the stomach.

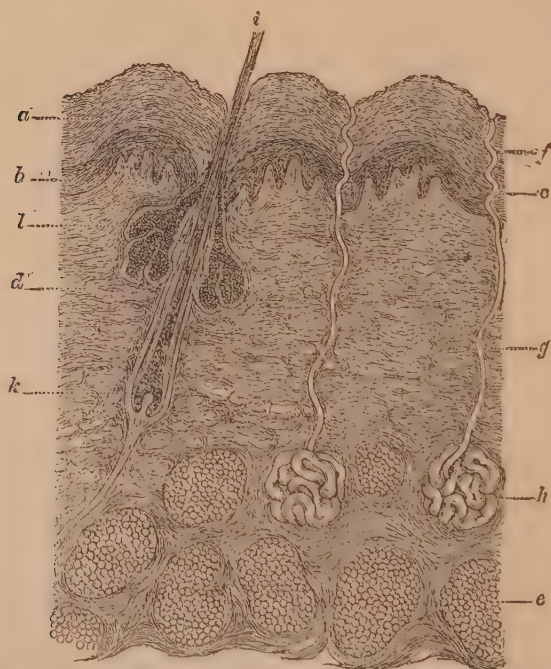
More recently W. LASCHKEWITSCH (Archiv von REICHERT und DUBOIS-REYMOND, 1868) has made similar investigations, and in some instances obtained different results. He found that the same alkali can be demonstrated on the skin of animals that have not been varnished, and also he was unable to find it in the blood of those which had been so treated. Quite as little, according to him, could the theory be correct which was advanced by GERLACH and other older writers, that the suppression of the cutaneous perspiration caused death by asphyxia, for he confined animals, with the head protected in an atmosphere of hydrogen or carbonic acid, without harm for six hours. Moreover, a cooling took place when the surface was varnished, which was followed by dilatation of the vessels of the skin. For example, two animals of as nearly equal size as possible were brought into a calorimeter, and the one which was varnished radiated more heat and warmed the water more than the other. On the other hand, animals which, after the varnishing, have been wrapped in wool, present no phenomena of moment; the rest has already been proved by SCHIFF and VALENTIN.

GENERAL CONSIDERATIONS.

ANATOMY.

THE skin of man, the organ of touch and sensation, consists of the epidermis, *a* (Fig. 1); the corium, *d*; the subcutaneous cellular tissue, *e*; also of nerves, blood-vessels, sudoriparous (*g*, *h*) and sebaceous (*l*) glands; together with the hair and nails.

FIG. 1.



Diagrammatic section of the healthy skin.—*a*, Horny layer or epidermis; *b*, Rete Malpighii, or mucous layer; *c*, Papillary layer; *d*, Tissue of the cutis vera or corium; *e*, Fatty tissue, or panniculus adiposus; *f*, Spiral duct of a sweat-gland; *g*, Straight portion of duct; *h*, Coil of the sweat-gland; *i*, Shaft of a fine hair; *k*, Root; *l*, Sebaceous gland.

Corium or Derma.—The corium (Fig. 1, *d*) is a very vascular, firm structure, made up of interwoven fibrillated connective-tissue bands, with abundant elastic fibres and connective-tissue cells. The interweaving of the filaments, however, becomes complete in the sensory papillæ and on the surface, to the disappearance of all interstices, and gives them a more homogeneous appearance.

The corium is covered by the epidermis; it is rich in nerves, contains many small bundles of smooth, muscular fibres, has lymphatics, and is penetrated by the hairs and their sheaths, as also by the ducts of numerous glands. The *thickness of the corium* varies considerably in different places, from 0.2'''–1.5'''. It is thinnest on the eyelids, the prepuce, the glans, and the inner surface of the labia majora. On the face, scrotum, and areolæ of the breast, it is thicker, from 0.3'''–0.5''' ; on the forehead, 0.667''' ; ordinarily, in most places, from 0.75''' to 1'''. We find it the *thickest* on the sole of the foot, the buttock and back, and frequently on the palm of the hand. It is thicker in men than in women, still thinner in children. The *papillæ* are found over the whole surface of the body. On the palm of the hand they are frequently located in groups, and more especially upon linear prominences of the cutis; in other places sometimes isolated, sometimes thickly set together. The longest, reaching from 0.0667''' even to 0.1''', are found on the palmar surface of the hand, the sole of the foot, nipples, etc.; the shortest are found on the face. The largest have a conical or acuminate form, the smaller a wart-like form. Besides the single we find *compound* papillæ, that is, broad elevations which run out in two, seldom in three eminences. On the under side the corium passes directly over into the soft, fatty, subcutaneous tissue.

Epidermis and Rete Malpighii.—The outer skin (epidermis) may be separated into a deeper (Fig. 2, *b*) and a more superficial layer *a*, which are separated from each other by a more or less marked line. The latter is the epidermis in the stricter sense, the former we designate by the name of the rete Malpighii, rete mucosum, or mucous layer. Where the epidermis dips down in the interstices between the tactile papillæ, and fills them, it is naturally thicker than on the summit of the papillæ; it thereby acquires a sieve- or net-like appearance.

In the deepest layers of the rete Malpighii we find small cells measuring from $0.0033'''$ – $0.004'''$, of roundish form, or oval, also those of a somewhat greater diameter (up to $0.005'''$), with borders very delicate and difficult to be recognized, and with more granular nuclei, often of a light-yellow color, whose size amounts to $0.002'''$ – $0.0033'''$, and whose form is more roundish or also oval. Then follow a not inconsiderable num-

FIG. 2.



Section of skin more highly magnified.—*a*, Epidermis with the flattened horny cells; *b*, Mucous layer with oval cells; *c*, Dense connective tissue of the papillae; *d*, Vascular loop of the papillae; *e*, Sensation corpuscle; *f*, Hair-shaft; *gg*, Outer root-sheaths; *h*, Outlet of the sebaceous gland.

ber of cell-layers one upon the other, in which the cells become gradually larger, from $0.008'''$ – $0.125'''$, undergo a polyhedral flattening, and the nuclei likewise appear larger, but more lentiform and paler. In these layers of the rete Malpighii there appear stellate or ribbed cells. We finally come to the smooth-bordered cells of the upper layer of the epidermis in the proper sense of the word, or the so-called *horny layer*, of the size of $0.125'''$ – $0.02'''$. The outermost stratum forms an easily-removable dense layer, in whose cells no nuclei are recognizable. This want of nuclei is unessential, for in the embryo all the cells are nucleated, even the most external epithelial scales, as also in adults in places where the skin retains a softer

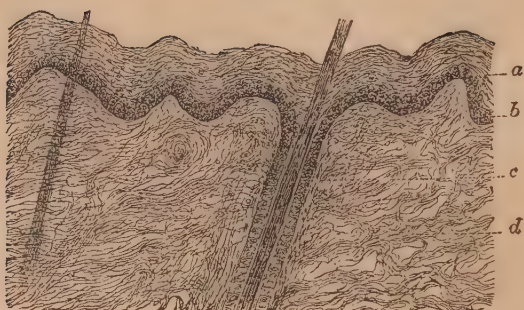
condition, more like the mucous membranes. From the fact that the strata of the epidermis lying upon each other present a whitish or even a brownish appearance, they must deaden the color of the corium which lies below, which would otherwise appear bright red on account of its great vascularity, and this it does in proportion to its thickness. Accordingly, on those places where the skin is the reddest—lips and cheeks—there the epidermis is very thin. On the other hand, in the sole of the foot and also on the hands of many men, it attains a thickness so great that the flesh-red color is gradually lost, and at last, in the very thick places, the color of the epidermal layers alone remains. Every callous spot demonstrates this. The epidermis, according to KÖLLIKER, is formed from the external layer of the blastodermic membrane, and consists even in the fifth week of two layers of cells, the rete Malpighii and the horny layer. The former gradually increases in thickness, while the outer portions are developed into epidermal scales.

Pigment.—Some portions of the skin of the Caucasian race are darker than the rest, this being less marked in blondes and more so in brunettes; these are the nipples, areolæ, scrotum, labia majora, and the fundament, as well as the more individual appearances of freckles and mothers' marks. That which in the white races is only an occasional appearance on the surface of the body, is seen in its fullest extent in the various dark complexions of the other varieties of our race, from the yellow brown of the Malay to the deep black of some negro races (Fig. 3, *b*).

As far as this subject has been investigated, these dark colorings (in which the tissue-fibres of the cutis never participate) appear to depend upon a threefold cause, which coexist in the deeper complexions; namely, on a coloration of the nuclei by means of a very diffuse pigment; on a similar but much fainter staining of the whole cell-contents; and, finally, on variously-shaped flakes and little particles of granular pigment in the body of the cell.*

* This pigmentation is found principally in the deeper layers of the epidermis; its outer strata, like those of the mucous epithelium, are more perishable, and suffer considerable loss by friction, washing, pressure of the clothing, etc.

FIG. 8.



Negro skin.—*a*, Epidermis; *b*, Rete Malpighii; *c*, Pigment of hair-sheath; *d*, Corium, consisting for the most part of elastic fibres.

Adipose Tissue.—The fatty tissue in a well-nourished and finely-developed body is seen to consist of numerous rather small and varying collections of oil immediately in the subcutaneous connective tissue, which is thereby converted into the *panniculus adiposus*. The quantity of this, however, differs in different parts of the body; very abundant collections of fat underlie the skin of the sole of the foot, the palm of the hand, the buttocks, and the female mammary glands, while the eyelid remains free from fat.

The quantity of these collections of fat, which, as a moderately-developed *panniculus adiposus*, determines the rotundity of the body (HYRTL), is subject to very considerable variations; it is more abundant in women and children than in men, and more considerable in the bloom of youth than in infancy and old age. Well-nourished persons on the one side and very lean persons on the other present a great contrast in the quantity of the fatty tissue they possess. Also, in consequence of protracted hunger, exhaustive diseases, as well as dropsical infiltration of the connective tissue, a well-nourished body may speedily lose its layer of fat, to be replaced soon after the return of health. The fact that in very emaciated corpses we find the fatty contents of the cells entirely absent, while the cell itself is preserved, must point to the fact that the latter are constant, and, with a subsequent improvement of the *embonpoint*, the protoplasmic contents can be supplanted by or changed into fatty deposition.

Nerves.—The primitive fibres arising from the nerve-plexus ascend to the so-called sensory papillæ (Fig. 2, c), singly or associated in microscopic bundles; the nerve-trunks frequently bifurcate.*

The *tactile corpuscles* are found on the palmar surface of the fingers and toes, in the palm of the hand and sole of the foot, as also on the heel. They are in greatest abundance on the flexor surface of the last joints of the fingers, and then diminish down along the second and first joints. These formations appear yet less frequent in the palm of the hand itself. Thus, on the last phalanx of the finger in a square line, MEISSNER found one hundred and eight out of four hundred papillæ with tactile corpuscles, while they amounted to but forty on the second phalanx, fifteen on the second, and eight in the palm of the hand; their number is proportionally greatest on the last phalanx of the toes, but the foot stands far behind the hand in regard to richness in nerves. Sometimes scattered sensation corpuscles appear on the back of the hand and foot, as well as on the volar surface of the forearm. Finally, we meet them, although likewise only in moderate quantity, in the nipples and in the skin of the lips. Among the mammalia, the tactile corpuscles have hitherto been found only in the ape.

* LANGERHANS (Virchow's Archiv, 44 B.) describes small bulbous formations in the Malpighian layer, from which run delicate fibres, which he has made visible by staining with the chloride of gold. The nervous nature of these corpuscles is, however, not yet fully determined. ПОДКОПАЕВ (Archiv für Mikroskop. Anat., 5 B., 4 H.) was able to corroborate LANGERHANS's investigation in the skin of a rabbit by means of a solution of chloride of gold. He also saw the nerve-fibres between the cells of the rete Malpighii, and proved their connection with the net-work under the rete, and likewise with that which appears between the epithelial cells. The subepithelial nervous net-work consists of long, marrowless fibres whose nuclei are only embedded in the side. He also found nerve-fibres which terminated between the rete and horny layer, and either ramified here or showed wavy expansions. Whether this expansion was likewise the ending, it was not possible to determine with certainty. From the nervous net-work which surrounds the hair-bulb, fine filaments run to the outer root-sheaths, as LANGERHANS had already described them to do. TOMSA (Centralblatt und Med. Wochenschr., 1869) treated fresh portions of human skin with chloride of gold, and boiled them with five per cent. of acetic acid, by which the epidermis was loosened from the papillary portion of the cutis, and he found that fibrillæ are given off from the marrowless net-work of the papillary portion toward the papillæ and apply themselves to the capillaries of the same. These filaments form a net-work embracing the capillaries, and from this net-work again fine fibrillæ are again given off, which are lost in their walls.

Their size and form vary; in the palm of the hand they measure $0.05'''$ and more, with a breadth of from $0.02'''$ – $0.025'''$, smaller ones reach only to $0.02'''$ – $0.0167'''$. In general, the greater sized are found of oval, the smaller of more roundish shape.

The tactile bodies lie in the central part of the upper portion of the sensory papillæ; and in the side of compound papillæ. The latter alone may exceptionally have at the same time a capillary loop; otherwise the papillæ with sensation corpuscles have no capillaries. These bodies (FREY) have a capsule, consisting of a homogeneous mass, and, as is seen on cross-section, with soft, finely-granular contents. Within the capsule, we further notice numerous somewhat elongated bodies arranged crosswise or obliquely, giving to the whole a marked, obliquely-striated appearance. The nerve-fibres enter it singly, in pairs, or sometimes even in threes or fours, surrounded by a single neurilemma which passes over continuously into the capsule. They have dark borders, $0.002'''$ and less in breadth, and penetrate some to the base of the sensation corpuscle, others more into its side. The terminal loops mentioned by some earlier writers do not agree with the single or triple nerve-fibres which enter the sensation corpuscle. Sometimes a peculiar looplike envelopment of the sensation corpuscle by means of the nerve-trunks is found, or they run for a shorter or longer distance over the corpuscle. Finally, they all enter the interior, but in what manner they here terminate is not yet ascertained; probably they branch off into pale, marrowless fibres, after the manner of the terminal knob. Whether the above-mentioned diagonal, nucleus-like bodies coincide with nerve-terminations, remains likewise undecided.

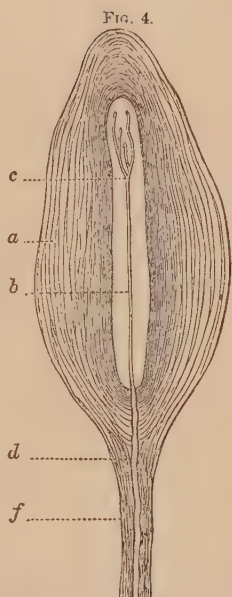
The *Pacinian corpuscles* (Fig. 4) may be compared to a terminal knob, surrounded by numerous concentric connective-tissue capsules. They are elliptical structures, measuring $0.5'''$ – $1'''$, sometimes larger, sometimes smaller. To the naked eye they appear compact and semi-transparent, with a white axis cylinder. They are found, in man, upon the cutaneous nerves of the palm of the hand and sole of the foot, especially in the nerves of the fingers and toes, and more particularly on the last joint of the same; likewise in the plexus of the sym-

pathetic nerve-system and by the side of the abdominal aorta: they are found only casually elsewhere. Their number on each of the four extremities of man has been estimated at from 600 to 1,400. They are also met with in the mammalia, especially on the sole of the foot. They are extraordinarily beautiful, and more or less abundant in the mesentery of the cat. Besides the mammalia, birds possess Pacinian corpuscles, although somewhat modified.

The capsule (*a*) is composed of connective-tissue membranes with a homogeneous and striped or fibrillated groundwork, and having rather elongated nuclei or cells embedded in it. Lately HÖYER, by means of a silver dye, has discovered an epithelium-like mosaic upon the inner surface of this membrane. The layers of the capsule are penetrated by a slight vascular net-work, are separated farther from one another toward the exterior, and correspond to the curvature of the whole capsule. The inner layers lie closer together, are less curved, and surround the axis cylinder (*b*), as a homogeneous, nucleated cortical substance.

The enclosed cylinder terminates above in a rounded extremity. At the lower end its wall is continued, together with the capsules, into one pedicle, to which the Pacinian body is attached as a berry on its stem. The pedicle consists of ordinary connective tissue running longitudinally (according to MICHELSON, of finely-granular protoplasmic substance without nuclei), and forms the neurilemma of the nerve-fibres which enter the structure and end there.

The nerve-fibres have a dimension of from 0.0063'''–0.005''' and less, and the ordinary medullary appearance. The fibre enters the corpuscle at its lower extremity, and occupies the central canal. In its passage through the axial cavity it loses its dark borders (as is the case in KRAUSE's terminal bulbs),



Pacinian corpuscles: *a*, Membrane of the capsule; *b*, Interior bulb; *c*, Branching stem; *d*, Axis cylinder; *f*, Sheath of axis cylinder.

and emerges with considerable diminution as pale terminal fibres. It passes through the entire inner corpuscle, and ends at its summit with one or more small knob-like swellings (c).

Divisions in the nerve-fibres may occur even before its entrance, and we not rarely see the pale terminal fibre divide into two or three branches; the axial portion may also participate in these divisions.

Once in a great while we find two nerve-fibres entering the same corpuscle and ending there, united in a single knot, or ununited (KÖLLIKER).

That the *Pacinian bodies* are to be considered as the sensitive nerve apparatus, cannot admit of any very considerable doubt after the investigations of WAGNER, MEISSNER, and KRAUSE. Very recently P. MICHELSON (*Archiv für mikroskopische Anatomie*, 1869) has interpreted quite differently the structure of the elements of the Pacinian corpuscles.

L. TÜRK, before his untimely death, had made some most important experiments as to the range of sensibility of the skin in dogs, which have been published since his death by C. WEDL.

Besides the regions which are supplied by a single pair of vertebral nerves, there are others which receive their nerve-supply from two or three pairs. The first cervical pair gives off no cutaneous nerves. The second, third, fourth, and fifth cervical pairs have their own special regions. The sixth cervical has an exclusive district, and also a general one. The seventh and eighth cervical pairs have only common regions of distribution. The first thoracic has again, as the sixth cervical, an exclusive and a joint district. The fourth lumbar, analogous to the sixth cervical, has an individual and common range. The sixth lumbar nerve is analogous to the seventh, the seventh lumbar analogous to the eighth cervical, and the first sacral nerve to the first thoracic.

The regions of distribution on the neck and trunk form bands, which run from the spinous processes to the middle line anteriorly, in a direction at right angles, or nearly so, to the long axis of the body. The arrangement of the cutaneous nerves on the upper and lower extremities are analogous; they form in general belts, resembling plates of armor.

Blood-vessels.—The skin receives its blood-vessels from the subcutaneous connective tissue; they are arterial and venous, and ascend perpendicularly, sending lateral branches to the corium, hair-follicles, sebaceous and sudoriparous glands. In the corium itself there appears a greatly-developed plexus of fine capillaries, measuring $0.0034''$ – $0.005''$, which supplies

the greater part of the papillæ with vascular loops of $0.004\frac{1}{2}'''$ and more in diameter, with the exception of those limited places of the skin where a part of the papillæ have the tactile corpuscles, and therefore remain unvascular.

Lymphatics.—The lymphatics of the skin, already known to earlier observers as a very dense net-work, have been more lately again described and portrayed by TEICHMANN. They are present in greatest abundance in those places where the skin is lax and flabby, and is subject to great contraction and relaxation, as on the scrotum especially, and also where the surface has large papillæ. A deeper net-work of greater calibre, and a superficial one of less size and with narrow meshes, may be distinguished: such a division, however, cannot be everywhere made out.

When the papillæ were morbidly enlarged, TEICHMANN found an axial canal, reminding him of the chylous vessel of an intestinal villus. According to him, *the subcutaneous connective and adipose tissue, also the sweat and sebaceous glands, and the hair-bulbs, have no lymphatic vessels.**

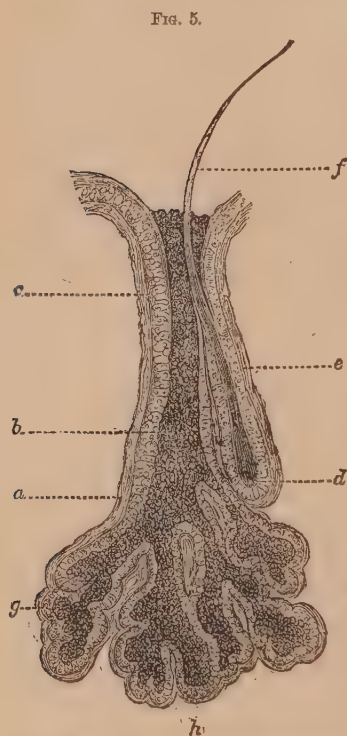
Sebaceous Glands.—The follicles of the sebaceous glands (Fig. 5) are lined with cells, which may be looked upon as a modified continuation of the Malpighian layer of the outer skin, but which are distinguished from the latter by a certain richness in minute fat-molecules. By a greater deposition of fat the cells increase in size, and separate themselves from their proper membrane, so that, in the cavity of the organ, cells are met with from $0.0167'''$ – $0.025'''$ in size, whose oily nature is most striking, and which either enclose numerous granules or drops of oil, or a solid portion of fat in the body of the cell, presenting the appearance of an ordinary fat-vesicle. It ap-

* YOUNG (Sitzungsberichte d. kaiserl. Akademie, B. 57) has rendered the lymphatics of the oedematous cutis visible by injecting the blood-vessels with a silver solution, and thereby producing the well-known epithelial silver discoloration on their walls. His results agree completely with those of TEICHMANN. He also assumes a closed lymphatic system, contrary to the opinion of those who believe in the existence of lymph interstices, and canals without walls. C. LANGER some years since demonstrated an enclosed lymphatic system by means of the injection of dye-substances. He afterward found in the skin of the tail of the tadpole processes given off from the lymphatics similar to those which S. STRIKER has described as coming from the blood-capillaries, and has recognized as belonging to the development of the capillaries.

pears that the nuclei gradually perish, and also their covering, frequently at least. Thus the secreted sebum is sometimes seen as free fat, sometimes in the above-mentioned cell-form, overlaid with oily matter.

The sebaceous glands, *glandulæ sebaceæ*, are small racemose structures, found over almost the whole of the skin—although under certain limitations, as are the sweat-glands. Their secretion is essentially fatty.

The sebaceous glands, which are always situated *in the corium itself*, and never in the subcutaneous tissue, as a rule, are associated with both the large and small hairs, into whose follicles they empty, single, double, or multiple. While they appear as an appendix to the larger follicles of the coarser hairs, in the finer downy hairs the relation is so reversed that the hair-follicle appears to have become an appendix of the glandular organ. In addition to these glands attached to the hairs, "the capillary sebaceous glands," we have those on



Sebaceous gland.—a, Connective-tissue envelope; b, Sebaceous gland; c, h, Fat-secreting cells; d, Root of a downy hair; e, Hair-follicle; f, Hair-shaft; g, Acini of sebaceous gland.

the hairless portions of the body which open directly outward. They are entirely absent from almost all the bare portions of the skin, as the palm of the hand and sole of the foot, and the last phalanges of the fingers and toes; there are, in general, but few on the genitals, and these, indeed, appear only on certain portions, as on the prepuce and glans and the labia majora. The structure of the sebaceous glands, whose size varies from 0.1''' to 0.3''' , to 0.5''' , or even to 1''' , is likewise very various. The smaller glands of the most simple kind are short, wide sacks; while the larger ones have distentions at their under portion, which be-

come more and more numerous, sometimes in a somewhat elongated, flask-like form—sometimes more round. These glandular follicles, which must constantly vary greatly in length, differ also considerably in diameter, from $0.025'''$ – $0.033'''$, or even $0.1'''$. The *largest* are found on the nose, scrotum, mons veneris, and labia majora. The sheath of the follicle and duct is not a transparent, structureless membrane, as is the case with glands in general, but consists of striped connective tissue. Blood-vessels do not generally appear at all around the body of the gland. The intensity of the secretion appears on the whole to be small, for the function only consists in a very slight inunction of the hairs and surface of the skin.

The secretion, the sebaceous matter (*sebum cutaneum*), when fresh, forms a semi-liquid oleaginous mass, which generally hardens, after a while, to be more like tallow. Its ultimate elements, with which exfoliated epithelial cells are mixed in varying quantity, leaving out of consideration certain differences which exist in different parts of the skin, consist essentially of a great quantity of neutral fats, to which saponaceous compounds, cholesterin, and a protein substance, are added. Among the inorganic constituents, the alkaline chlorides and phosphates are in lesser quantity, while the earthy phosphates preponderate.

The sebaceous glands are developed as outgrowths of the outer root-sheath of the hair-follicle between the fourth and fifth month of foetal life. These excrescences, at first wart-like, gradually grow to be more pear- or flask-shaped, and a cavity is formed in them by the innermost cells undergoing a physiological fatty metamorphosis. This fat is poured out into the hair follicle as the first secretion of sebaceous matter.

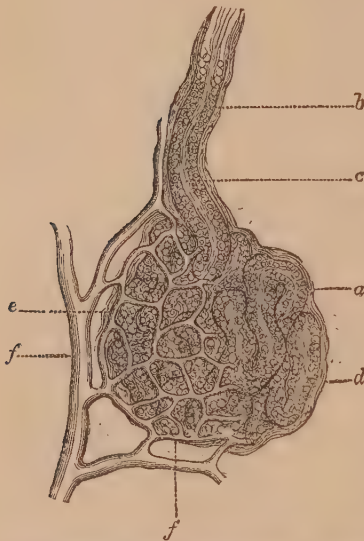
Sudoriparous Glands.—The convoluted body of the sweat-gland lies either in the deepest part of the corium, or, as a rule, in the subcutaneous tissue, surrounded by the fat-cells of the panniculus adiposus. The excretory duct, longer or shorter, according to the thickness of the skin, penetrates the corium with moderate tortuosities, and passes thence into the epidermis between two neighboring papillæ; here it makes great windings, corkscrew-like.

The *openings* of the ducts on the surface of the skin are of microscopic size, with the exception of those on the palm of

the hand and sole of the foot, which are gaping and funnel-shaped. Here they appear as little dots in rows on the ridges of the skin; in other places the openings are irregularly grouped.

The *contents* of the perspiratory glands consist sometimes of a single, sometimes of a double, layer of polygonal gland-cells, rather small, measuring from $0.005'''$ – $0.0067'''$ (*a*, Fig. 6),

FIG. 6.



Sudoriparous gland greatly magnified.--*a*. Twisted coil with the secretory cells (epithelial); *b*. Excretory duct of the gland; *c*. Canal of the duct; *d*. Connective-tissue capsule; *e*. Artery of gland—branches of the same, forming the capillary net-work.

whose protoplasm very commonly contains molecules of a brownish pigment, and of neutral fats. The excretory duct (*b*) conveys either a clear, watery fluid, destitute of granular matter; or, as is the case in the larger glands, a thicker mass, rich in fat and albuminous molecules, which owes its origin to a mucous transformation of the protoplasm of the gland-cells, and often reminds one of the fatty secretion of the nearly-allied ceruminous glands, or the agminate sebaceous glands. The blood-vessels (*e*, *f*, *f*) form a delicate basket-like capsule around the coil; the nerves have not been recognized, although an influence upon the mechanism of secretion, by the nervous system, is altogether probable, similar to that in the salivary glands.

The perspiratory glands are found over the whole skin, hairy or not, with the certain exceptions, *subject, however, to considerable differences* in different places in regard to their grouping, size, and quantity. They are regularly disposed, on the palm of the hand and sole of the foot, generally in rows on the ridges of the skin. In most places, on the contrary, they appear in small, irregular groups, separated by portions of the skin of various sizes destitute of glands. On the lips, they ex-

tend to the red border; on the nose, to the opening of the nasal cavities; on the penis, to the boundary of the outer surface of the prepuce; on the labia majora, likewise to the place of transition of the skin to mucous membrane. The smaller glands exist over almost the whole external surface of the body; but in the axilla we find large glands of complicated structure closely arranged, forming a regular layer. KRAUSE has furnished interesting communications concerning the number of the sweat-glands. While a square line on the neck, back, and buttocks, possesses on the average 417; the cheeks, for example, have 548 in a square line; the inner surface of the leg and thigh, 566; the forearm, exteriorly, 1,093; on the inner surface, 1,123; breast and abdomen, 1,136; forehead, 1,258; the back of the hand, 1,490; palm of the hand, 2,736; and the sole of the foot, 2,685. That observer calculated the total number of these glands on an adult body of average size to be 2,381,248. There are, however, certainly a great number of individual variations in this respect.

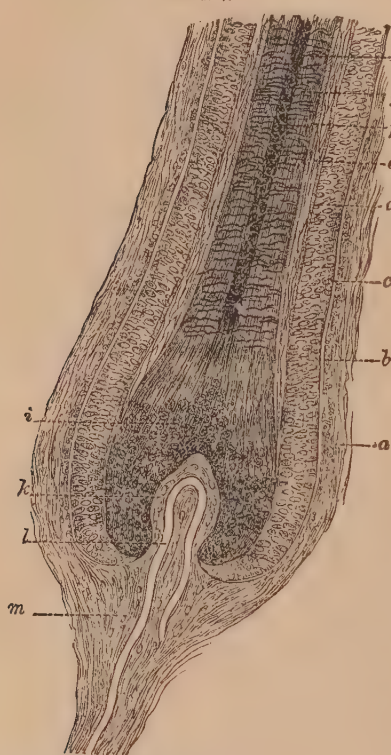
The perspiratory glands, according to KÖLLIKER, are developed in the fifth month of foetal life. At first they are seen as small, flask-like depressions of the cells of the Malpighian layer, which in the following months penetrate deeper down through the skin, and gradually coil themselves at their lower extremity like a skein. There now begins to appear an indication of a canal-like opening in the axis of the cell-mass, and the external orifice is formed.

Hairs.—The hairs (Fig. 7) are filamentous formations of modified epithelial tissue, of quite complicated structure. We speak of their *shaft* (*g*), the greatest portion of which projects from the skin, and terminates in a point; the lower portion, their *root* (*i*), which is buried in the skin, and ends in an expanded extremity; and the *hair-bulb* (*k*), which, together with its sheaths, is included in the hair-follicle (*a*). The hair-bulb rests upon a *papilla* (*h*), which projects from the base of the follicle, and is received into an excavation in the bulb. Between the follicle and the hair proper we find complicated, sheath-like coverings, the root-sheaths, which can be separated into an inner (*d*) and outer (*e*).

The hair-follicle or sac is an obliquely-directed inversion of

the corium of various depths, reaching in the case of the larger

FIG. 7.



The Hair.—*a*, Hair sac or follicle; *b*, Vitreous internal sheath; *c*, Outer root-sheath; *d*, Inner root-sheath; *e*, Cuticle of the hair; *f*, Cortical portion; *g*, Body of hair; *h*, Medullary substance; *i*, Hair-root; *k*, Papilla; *l*, Vascular loop; *m*, Continuation of the hair-follicle downward.

hairs down into the subcutaneous cellular tissue. Its general form is cylindrical, not unfrequently diminished in size toward its lower, blind extremity. It consists of a mass of connective-tissue fibres, essentially like the corium, in which many layers can be recognized, and to which externally a small bundle of smooth muscular fibre is attached (the *arrector pili*, or muscle of the hair-follicle); the outer layer consists of longitudinal connective tissue with spindle-shaped nuclei. There is a pretty well-developed capillary net-work found around the follicle; single nerves have also been discovered here. From the base of the follicle there rises the hair-papilla, composed of rather undeveloped, nucleated, and but slightly-fibrillated connective tissue; and this must be considered as a modified

papilla of the skin. Its form is conical or ovoid, in which the longitudinal diameter is always the greatest.

G. WERTHEIM asserts that the connective tissue of the hair-follicle does not terminate below, but is prolonged into a cord (*m*), which passes out of the corium into a connective-tissue band; this continuation is related to the hair-follicle as the stem to a goblet (!); the longitudinal outer layer and the middle circular layer of the sheath pass over into it, as also the inner or transparent sheath for a short distance.

The papilla has a vascular loop (*l*) in its interior, and *must*

be considered as the place of formation and nourishment of the hair. As the follicle is an inverted portion of the corium, the outer root-sheath is the inverted layer of the rete Malpighii; opinions are yet at variance with regard to the significance of the inner sheaths.

The hair bulb or root is composed of the same compacted cells which form the outer root-sheath. They contain either colorless granules, or molecules of pigment, varying in quantity and color according to the color of the hair. Further on, these cells change their nature, and in this change there is in many hairs a contrast between the axial and peripheral portion, forming a medullary and cortical substance. If we examine the cortical part as a whole, we find it permeated with a coloring matter varying with the shade of the hair. The hair is traversed by irregular longitudinal striæ, representing the edges of neighboring laminæ of the hair, or resulting from streaks of pigment-granules, which are more abundant in darker hairs. Finally, the dry, hard condition of the hair causes the penetration of air-bubbles, which often, in very considerable number, occupy small, somewhat elongated interstices between the hair-lamellæ. Upon the deepest part of the hair we find a peculiar thin envelope, which is developed outward into the epidermis or cuticula of the hair.

The medullary substance (*h*) represents by no means an integral constituent of the hair, for it is generally wanting in the fine, downy hairs, and also frequently disappears, either in places or entirely, from the hairs of the head. It appears as a streak, which occupies the third or fourth part of the thickness of the hair.

Hairs are found over almost the entire surface of the body. They *are absent* from the upper eyelid, the lips, the palm of the hand and foot, likewise from the dorsum of the last phalanx of the fingers and toes; finally, from the inner surface of the prepuce and the glans. Moreover, they present very considerable differences in regard to their size, as may be seen from the variation in their thickness from 0.06''' and more down to 0.006'''. Their length also varies extraordinarily, from the delicate lanugo, 1-2''' in length, to those three and four feet long, as on the heads of females.

Many hairs, notwithstanding their thickness, remain very short; such are the eyebrows (supercilia), eyelashes (cilia), and the hairs at the entrance of the nose. The straight or curled condition of the hair depends on the shape of its shaft, which in the former appears round on cross-section, in the latter oval or kidney-shaped.

The hairs are found singly, in pairs, or in small groups, the oblique direction of the follicles causing a number of various relations of position in different places. The number of the hairs varies considerably on different localities. Thus, while on a quarter of a square inch on the crown of the head two hundred and ninety-three hairs have been counted, but thirty-nine were found on a similar surface of the beard, and only thirteen in a like space on the anterior surface of the thigh. That we meet also with numerous individual differences is familiar to all.

The hairs display a considerable strength and also extensibility. They will bear a considerable weight, and, if the extending force is not too great, resume again pretty nearly their former length. Their dry, horny nature makes them a very enduring element of the body (see the hairs of mummies). They absorb moisture readily, both from the atmosphere and also the fluid from the surrounding parts, by means of their bulb. Upon the latter property depends the tissue metamorphosis of the shaft, which appears to be considerable, notwithstanding its dry condition, as is shown in cases of the sudden turning gray of the hair. The air which collects in their interior is associated with the process of drying. The hairs also absorb fat from the sebaceous glands, and, as HENLE has rightly said, we may determine the physiological or pathological condition of the skin from the state of the hairs—from their brittleness on the one hand, or their soft, flexible, shiny appearance, on the other.

The nourishment and growth of the hair take place in a manner quite similar to those of the nails. According to investigations thus far made, a proliferation of cells takes place at the undermost, softest portion of the hair-bulb, maintained by exudative material derived from the capillary of the papilla.

The growth of the hair is hastened by cutting, as in shaving

the beard. On the other hand, when they remain in their natural relations, the limit of their growth seems to be reached at a certain length. They may be completely regenerated if the follicle is not destroyed.

The hairs are said to grow more rapidly in the day than at night, and quicker in warm than in cold seasons of the year.

EMBRYONIC DEVELOPMENT.—The hairs are developed at the end of the third or beginning of the fourth month of foetal life, and in the following way: The mucous layer of the epidermis forms small, teat-like vegetations on its under surface, the so-called hair-germs. These cause a depression in the cutis, namely, the hair-follicle. During the growth of the mucous layer and the epidermis into the form of flask-shaped prolongations, the hair-papillæ are formed from the cutis, and are early provided with a vascular loop. At the same time the epidermal cells of the hair-germs separate into two layers: an inner, in which the elements assume a more compressed form; and an outer, whose cells remain in connection with the cells of the mucous layer, and represent the outer sheath. The inner layer afterward divides again into two, the hair proper, and the inner root-sheath. Once formed, the hairs begin to grow, and soon make their appearance, first on the head and region of the eyebrows at the end of the fifth month; the process ends with the extremities in the twenty-third to the twenty-fifth week. The hairs continue to grow until the end of foetal life, but are shed before this event; new hairs form soon after birth.

A. GÖTTE (*Archiv für Mikroskop. Anat.*, iv., 273) has lately furnished the following interesting facts concerning the development of hair:

We first have a limited papillary germination of the cutis, the growth of cells stopping short at the connective tissue of the true skin. The epidermis is thus raised into slight elevations, which soon disappear, growths from the rete Malpighii soon covering the papillæ of the cutis and crowding the latter downward. The epidermis and cutis are always separated by a transparent membrane, directly upon which rests the deepest layer of the rete Malpighii, consisting of cylindric cells, upon which lie the more roundish cells above. As the mucous layer is prolonged downward, it becomes slightly contracted close upon the papilla, whereby the portion of the prolongation lying above is thickened. A more rapid growth now progresses from the papilla, leading to the formation of the body of the hair and inner root-sheath. On its periphery somewhat elongated cells are formed, which soon assume a conical shape within the epithelial prolongation. This cone arising from the papilla represents the germ of the hair and inner root-sheath, while the envelope formed by the epithelial inversion surrounding the same is the commencement of the outer sheaths. The central cells of the cone develop into fibres, and shortly afterward the cone divides into a central portion (the hair-shaft), and a peripheral (the inner sheath). In the centre of the cone is seen the body of the hair,

which is horny to its end, and terminates in a swelling at the extremity of the papilla—the hair-bulb. GÖRTE makes two kinds of hair-formation in man, a primary and intermediate, the former coming especially in adults on those parts of the body covered with down. The intermediate hair-formation displays the same original steps of development as the primary. The first crop of hair agrees completely with the embryonic. A hair is then formed independently and removed from the papilla, from the side of the epithelial prolongation, by an extension and hardening of the cylindrical cells of a special part (the perisperm). This hair, imperfect from the want of a papilla and a perfectly-formed inner sheath, the writer calls the intermediate hair (*Schalthaar*), and the hair which makes its appearance sooner or later beneath this, exactly after the type of the embryonic hair-formation, he calls the secondary hair. The intermediate hairs but seldom reach any considerable length, as they are generally crowded out by the growth of the secondary hairs. As a rule, they remain colorless, even in negroes, until they have reached a certain size, whereas the secondary hairs of the same places of the skin show an abundant pigmentation immediately at their formation.

Muscles of the Skin.—The location and extent of the organic muscular fibres, according to my observations, are the following (see my essay in the reports of the sittings of the Imperial Academy, 1868. *Sitzungsberichte der kaiserl. Akademie*):

The *arrectores pili* are sometimes found on one, sometimes on both sides of the hair-sac, and are situated in the uppermost part of the corium; the principal trunk often divides into several branches, which again divide many times and form a net-work; the muscles are also prolonged as three or four parallel bands toward the surface, which are inserted singly or together. Others pass from the upper part of the corium to the panniculus adiposus, and, subdividing, send out horizontal and vertical branches.

There are also bands running horizontally above and beneath the sweat-glands, especially on the scalp and in the axilla.

We find also broad bands of muscular fibre in the outer portion of the corium; if we remove the epidermis carefully, and then make a delicate horizontal section, the course of these beneath the papillæ can be plainly seen.

The appearance of the muscles varies according to the individual and locality. The condition of the body has in general no influence on the appearance of numerous muscles, and on

young, emaciated bodies I frequently found them quite as strongly developed as in vigorous persons. As to locality, the following scale can be made: scrotum, penis, anterior portion of the perinæum, scalp, forearm, thigh, upper arm, shoulder, forehead, abdomen, axilla, leg, face, palmar and dorsal surface of the hands and feet. They are less developed on the flexor surfaces of the extremities than on those of extension.

Physiological Action.—By the contraction of the cutaneous muscles, the blood is driven from the capillaries and the outer surface of the skin toward the interior, and the loss of heat by the skin is thereby diminished. With the diminished temperature, the contraction also becomes less, and the radiation of heat again takes place; further, the muscles of the skin, which are attached to the surface of the corium, by their contraction will draw downward from their insertion; so, also, the bands which run transversely and diagonally must produce corresponding depressions. The exposed surface then consequently becomes less. Secondly, the contraction of the organic muscular fibres must cause a modification in the relations of the circulation: on the one hand, less blood is brought to the smaller arteries by their contraction; while, on the other, the return of the blood may also be thus hindered. The muscles of the skin become, therefore, at the same time an important regulator both of the circulatory relations and of the tension of the skin.

In those places where abundant elastic tissue is found (scalp and extensor surfaces of the extremities), the bands of organic muscular fibres also are more abundant and larger.

The secretions of the cutaneous glands (the perspiratory and sebaceous) are also doubtless influenced by the muscles, for by their contraction the secretion is forced from the glands.

Nails.—The nail is a hard, dense, flattened, more or less curved structure, of a rounded, quadrilateral form. It is more bent down at the sides, and is thicker at the free anterior border than at the opposite posterior end. Of the borders, the anterior alone is free, while its edges are sunk in a fold of the skin which begins as a shallow groove at the end of the finger, and deepens posteriorly. Finally, the back portion of the nail is sunk in a very deep furrow, 2''' or more in depth. The embedded part is called *the root* of the nail; the fold-like furrows, the nail-sheath; and the part of the corium covered by the nail bears the name of the *matrix*.

The nail rests directly upon the matrix, giving to it its shape, and to which it adheres so closely that it can be removed only by maceration.

If we examine a matrix deprived of its nail by maceration or scalding, we find the corium thrown into longitudinal ridges. Upon these the papillæ of the skin stand separate, being closer together under the root of the nail, but less elevated. The matrix is divided into two portions by a generally well-defined convex line, which is seen through the nail, the so-called *lunula*. As already noticed, the Malpighian layer projects with tooth-like prolongations into the interstices of the furrows of the cutis, the same relations holding here as in other parts of the skin. According to KRAUSE, the nuclei of its cells contain in the negro the same dark-brown coloring matter as in the skin itself. The under surface of the epidermis is attached to the Malpighian layer by slight serrations; the root of the nail is very considerably thinner and much softer than the free extremity. Finally, the epidermis at the posterior furrow extends for a distance upon the outer surface of the nail, as does that of the extremity of the finger upon the under surface of the free border. The nails are distinguished from the horny layer of the epidermis by greater hardness and density; they agree essentially, however, in their chemical relations.

The tissue of the nails is nourished by the blood-vessels of the matrix and sheath, and under ordinary circumstances displays a growth which far exceeds the loss of substance consequent upon the wearing off of the free border. There is a limit to this growth when the nail is not cut, as is seen in the case of the Chinese. The nails grow more rapidly in childhood than in old age, and quicker in summer than in winter. The nails develop unequally on the various fingers, and also the same fingers on the right and left hands. As to the manner of growth, the deeper cells of the rete Malpighii retain their position, while the horny layer is pushed forward over the soft cell-layers beneath, by the constant formation of cells at the posterior portion of the nail, and their transformation into horny cells.

FORMS OF SKIN-DISEASES.

The forms under which diseases of the skin appear are—

1. *Macule, Spots (Flecke)*.—These are circumscribed patches, differing in color from the normal. Change of color in the

skin is caused—1. By hyperæmia in the superficial strata of the papillary layer (erythema, roseola); 2. By hæmorrhages (purpura); 3. By the deposition of pigment (ephelides); 4. By the absence of pigment (albinismus partialis).

2. *Papule, Papules (Knötchen)*.—By this we understand elevations above the surface of the skin, from the size of millet-seed to that of a lentil, which have their origin—*a*, in a circumscribed inflammation in the papillary layer (papulary syphilides). The exudation may be either principally serous, or consist for the greater part of cells; the papules are at first redder than the surrounding parts (from hyperæmia); they may afterward become pale when the exudation has produced pressure upon the capillaries; *b*, from circumscribed effusion of blood (purpura papulosa); *c*, papules further are produced by a collection of sebum in the follicles (miliun); *d*, by the inflammation of the follicle (acne); *e*, by the accumulation of masses of epidermis (psoriasis punctata); *f*, lastly, circumscribed new formation of cells may produce papules, as, for example, in lupus.

3. *Tubercula, Tubercles (Knoten)*.—Under this head come greater inflammatory infiltrations in the corium, extending even into the subcutaneous cellular tissue, as large as a pea or a hazel-nut (furuncle). Tubercula may likewise result from new formations, as sarcoma and carcinoma.

4. *Phyma, Tuber (Knollen)*.—This is a tumor from the size of a walnut to that of the fist, extending as well above the surface of the skin as also into the depth of the cutaneous tissue (rhinophyma, molluscum).

5. *Pomphi, Wheals (Quaddels)*.—These are flat serous or inflammatory infiltrations, whose transverse diameter exceeds their height. Quaddels are either circular, oval, or irregularly shaped; the smaller are usually red, the larger are lighter in the centre, with a red margin. The red areola may be caused by the blood being crowded into the periphery by the accumulated serous fluid, or the entrance of blood to the affected part being prevented by the exudation present, and thus retained in the periphery. The most beautiful forms of wheals are seen in urticaria.

6. *Vesiculæ, Vesicles (Bläschen)*.—These are elevations of

the epidermis with serous or sero-purulent contents, either transparent or turbid. The effusion of serum takes place between the horny and the mucous layer; the compressed, spindle-shaped epidermal cells form bands and divisions, which cross and divide up the cavity of the vesicle (herpes, sudamina).

7. *Bullæ, Blebs (Blasen)*, are distinguished from vesicles only by their greater size; their contents are either serous or sero-purulent (pemphigus), or they may be hæmorrhagic.

The origin of vesicles and bullæ is explained in the following manner (RINDFLEISCH): An exudation takes place from the capillaries of the papillary layer, and passes unhindered through the mucous layer of the epidermis, but is retained by the epidermis. The fluid in the vesicle is at first clear lymph, which after some time assumes a gelatinous, and later a purulent character. If the epidermal layer of a large blister be raised with the scissors, the surface of the cutis is presented as a whitish net-work, dotted red in its meshes; the red points corresponding to the hyperæmic papillæ; the whitish net-work is the undeveloped remnant of the epidermis, which forms a thicker layer between the papillæ than over their surface. (See Herpes Zoster.)

Pustulæ, Pustules (Pusteln), are elevations of the epidermis occasioned by collections of pus beneath it. The collections of pus originate either in the glands of the skin (acne), or in the substance of the corium (furunculus), or in the papillary layer (impetigo), or, finally, between the mucous and horny layer (small-pox). In the latter case, the exudation is at first serous; the contents of the vesicle begin to grow cloudy from pus-corpuscles, and when the latter preponderate the fluid becomes yellow, and the pustule is then complete.

Either the papillary layer retains its natural outlines and is filled with a great quantity of cells, which form especially on the tops of the papillæ, so that there is an unbroken layer of such cells passing directly into the rete Malpighii; or, the difference between the corium and epithelium ceases at the top of the papillæ, and the boundary between the papillæ and epidermis can be made out only by dissection with a needle. The inflamed papillary layer finds itself in the condition of most luxurious reproduction, the young cells separate themselves, moving toward the surface, and are here secreted as pus-cells (RINDFLEISCH).

From the time of antiquity to the present there have been distinguished three kinds of pustules, which vary from one another only in size:

a. *Achor* is a pustule of the size of a millet-seed, raised but little above the healthy skin, generally traversed by a hair.

b. *Pustula psyrdracia* is larger than achor, not round, encircled by a red halo, and contains principally pus, which dries to a yellow, yellowish-brown, or brownish-green crust, and generally occurs on the extremities.

c. *Pustula phlyzacia*, which is never smaller than a pea, hemispherical, with bloody-purulent contents, and which finally dries to a dark-brown or black scab.

The lesions here mentioned are called by HEBRA the *primary*, because they represent the original forms under which diseases of the skin appear, as distinguished from the *secondary*, to which belong — 1. Excoriations or abrasions of the skin (Excoriationen); 2. Squamæ, scales (Schuppen); 3. Crustæ, crusts (Krusten); 4. Ulcera, ulcers (Geschwüre); 5. Rhagades, cracks, fissures (Rhagaden); 6. Cicatrices (Narben); 7. Pigmentary deposition.

1. *Excoriations*, or *Abrasions*, are losses of substance on the surface of the skin which result from mechanical injury, especially from scratching with the nails; they are entirely the result of scratching, which is performed in varying degrees according to the intensity of the itching. When the itching is but slight, as in infancy, the superficial layer of the epidermis alone is removed by the nail; if the irritation is more severe, even the papillary layer is laid bare, and we find them reaching even into the subcutaneous cellular tissue. From repeated scratching we have inflammatory exudation and effusion of blood. The exudations and the blood dry into yellow, brown, or black crusts, and these have various forms according to the different causes of irritation, and vary with the size and form of the primary eruption: thus in prurigo and scabies, for example, they are small and roundish, corresponding to the papules scratched; they are rather elongated, and in lines, when dependent on the itching caused by the presence of lice; they are irregular, more commonly of the size of a millet-seed, and brownish red, in pruritus cutaneus and from bed-bugs.

2. *Squamæ*, *Scales* (*Schuppen*).—By these we understand dried masses of epidermis separated from their normal position. The more superficial the process which occasioned them the fewer the scales, and a slight exfoliation alone takes place; the deeper the inflammation has extended, and the longer it has lasted, the more abundant are the scales. The exfoliation

takes place in the form of furfuraceous scales (prurigo), in larger lamellæ (measles, psoriasis), or as a membrane (scarlet fever).

The question why in certain cases, with an increase of the morbid process, an accumulation of epithelial cells takes place instead of a simple shedding of them, may be answered in the following way: The more copious the cell-formation becomes on the surface of the inflamed cutis, the more imperfect is the development of individual cells. The average height of development which is reached under these conditions is that of transition-cells between the cylindrical elements of the mucous layer and the undermost cells of the horny layer. Therefore the thorough hardening, which we call the horn formation, ceases, and in its place there comes a simple drying of the yet soft protoplasm. By this exsiccation the cells naturally cleave to each other; and, as we see, preserve a longer although a purely mechanical connection with the surface of the body. The shining, mother-of-pearl color of the scales of psoriasis results from the admission of air as the cells dry (RINDFLEISCH).

3. *Crustæ, Scabs (Borken)*, are dried, purulent or sanguino-purulent exudations or extravasations on the surface of the skin in variously-colored yellow or brownish masses. Scabs arise, for example, from the drying of the contents of the vesicles in herpes, or of the free exudations, as in eczema, etc. There is an intermediate form between scales and crusts, when, from the abundant secretion of sebum, the crusts which form are mingled with epidermal cells (seborrhœa). The accumulation of fungus and epithelial masses may resemble crusts, as in favus.

4. *Ulcera, Ulcers (Geschwüre)*, are suppurating sores, which extend to various depths, show no inclination to heal, and are replaced in part by cicatricial tissue. Ulcers may be the result of various morbid processes, upon which their form, extent, and course depend.

5. *Rhagades, Cracks, Fissures (Einrisse)*, are linear or fissured wounds, generally perpendicular to the surface, which come from ulcerations of the skin and mucous membranes. In every case they result from repeated muscular action on inflamed or ulcerated places, principally on the palmar and plantar surfaces of the fingers and toes, at the angles of the mouth, at the back of the tongue, and on the flexor and extensor surfaces of the elbow and knee.

6. *Cicatrices* (*Narben*) are new formations of connective tissue which supply the place of lost material; the size, form, superficiality, and pigmentation of scars, depend on the depth and extent of the preceding loss of substance and its cause. Cicatrices always consist of connective tissue, and never contain epithelial elements, hairs, sebaceous or perspiratory glands, although remnants of such structures may remain enclosed in the scar.

7. *Pigmentary deposits* are changes in color which remain after former inflammations, or appear as local disturbances of pigmentation, without any inflammatory action accompanying or preceding.

DIAGNOSIS.

In the diagnosis of skin-diseases we must consider *almost exclusively the objective phenomena*, as very little value is to be placed on the statements of the patient. The sight plays the most important part in diagnosis, while the senses of touch and smell are of some service. Important assistance is also rendered in many cases by the microscope and chemical analysis.

We first make the diagnosis as it appears on inspection of the patient: for this, clear daylight is preferable to every form of artificial illumination, because artificial light alters the color of the eruption; especially is this important in those cutaneous diseases in the form of spots or maculæ. Furthermore, *the single observation of an isolated part in most cases does not suffice for the diagnosis*; the patient must therefore be stripped and the whole surface of the skin must be viewed. Some of the elements to be considered are, whether the patient is sufficiently careful as to the cleanliness of his person, what is the general condition of nourishment and coloration of the skin, etc., which may furnish important hints as to diagnosis in certain dyscrasiæ. Then we decide if the skin has on it any of the above-mentioned elementary lesions. From the inspection of these the following will be learned:

Maculæ and *papules* are of various shades of red in inflammatory processes, and from effusions of blood; or they may be of a brown color after expended processes, in pigmentary diseases, and with the presence of vegetable parasites. They appear on single portions, or cover the whole body. The color

and arrangement of these efflorescences, with other things, are quite sufficient for the diagnosis: thus, for example, a lichen urticatus, in the form of pale-red papules, is found mostly on the face or hand and forearm, while a papular syphilide of similar appearance is scattered over the whole surface of the skin. *Quaddels* appear as elevations, of a pale red or even of a lighter color than the surrounding skin. The presence of itching is an important point in diagnosis; this is shown in many cases by existence of the results of scratching (excoriations); an erythema nodosum may be thus distinguished at once from urticaria.

Vesicles must be considered with especial reference to their grouping, their contents, and their surroundings. Thus, in herpes iris, a circumscribed group of vesicles is seen, in whose centre are larger and older eruptions, while in herpes zoster extended groups of vesicles are found frequently confluent, whose distribution points to a connection with the innervation of certain regions of the skin.

Bullæ are to be judged with respect to their contents and extent: thus the bullæ which result from burns and vesicants are recognized by their serous contents and limited extent; the bullæ of erysipelas occupy certain regions upon which erysipelas can at once be recognized; lastly, the bullæ which belong to pemphigus are spread over a large extent of surface, and their immediate vicinity alone is reddened. The bloody bullæ from bruises are recognized by their dark-purple color.

Pustules afford very characteristic marks of the diseases which occasion them, both by their localization and also by the condition of their immediate surroundings. The pustules of acne are easily recognized, for they appear principally on the face, breast, and back, and are always accompanied by comedones. The latter are not seen with the pustules of impetigo, but, on the other hand, other results of scratching may be recognized, more especially excoriations. The pustules of variola and those of syphilis are, as a rule, scattered over the surface; the skin around the former, however, is of a bright-red color, of a coppery-red around the latter; in the former, the pustular contents fill the whole pustule; in the latter, only the apex is pustular, and the base hard.

Excoriations always show the existence of itching. Their depth attests the intensity of the itching, their form its source; and a conclusion may be drawn as to the duration from the diversity of their form. We stated, on page 45, that it is possible to obtain a certain knowledge of the cause of the disease from all of these characteristics.

Squamæ, scales, are of but little relative worth diagnostically; we can only determine from their presence as to whether we have to do with the residue of an inflammatory process, or with a disease *sui generis*, as psoriasis; the latter presents a scaly eruption over the whole surface of the skin, especially on the extensor surface of the joints, while the presence of scales solely on the palma manus and planta pedis is a common mark of syphilis.

Scaly eruptions frequently appear combined with anomalies of pigment and diseases of the hairs, and in such cases prove the existence of vegetable parasites—herpes tonsurans, pityriasis versicolor, eczema marginatum.

Crusts or Scabs.—No diagnosis can be made alone from the presence of scabs, yet regard should always be had to the following points: 1. Color. This is of a bright sulphur-yellow in *favus*; shining and dark-yellow in that form of eczema which is called *crusta lactea*, and brownish red or dark brown, from the admixture of blood, in excoriations and in *ecthyma luridum*. 2. Extent. Crusts are large in eczema, and small in impetigo and syphilis. 3. Form. This is irregularly flat in most of the diseases that have been mentioned, and elevated and conically pointed in a form of ulcerated cutaneous syphilis (*rupia syphilitica*).

Ulcers present, in many cases, such characteristic marks that we may form a definite conclusion as to the disease occasioning them from their appearance. We may mention the livid, undermined edges, and the pale base covered with exudation, of scrofulous ulcers; the steep edges sharply cut, as with a chisel, and the base covered with diphtheritic exudation, of the chancre; the characteristic kidney-shaped form, the partly-sloping and partly-flattened edges, of all syphilitic ulcers, etc.

Cicatrices show, in general, no marks absolutely characteristic of the preceding destructive process; in single cases, how-

ever, some conclusion as to the nature of the process may be drawn from the appearance of the scar; for instance, thick, swollen, and radiating scars indicate severe burns, or cauterization; deep, smooth cicatrices, either dark-colored or colorless, are sometimes left after chancres; irregularly pigmented, reniform, shining scars, depressed in places, remain after syphilitic ulcers. The location of cicatrices allows approximately of a conclusion as to their source: thus, in acne and small-pox the scars appear principally on the face, those of pregnancy on the abdomen, while superficial, slightly-discolored scars scattered over the whole surface of the body will possibly remind one of an antecedent syphilide. Herpes zoster leaves peculiar scars, which are in groups on one side of the body. Rather long, flat, glossy scars on the back are the results of pediculi vestimentorum. We can also frequently judge of the preceding morbid process from the location and extent of pigmentary deposits.

Hæmorrhagic and pigmentary eruptions are distinguished from inflammatory by the fact that the former do not disappear under pressure with the finger, while the latter fade more or less on pressure, to return again when it is removed. Further, infiltration of the skin (prurigo), changes in temperature, smoothness or asperity, and the readiness of removal of scales, are learned by the sense of touch. Finally, we are compelled, in many cases, to dislodge the scales or crusts by force, in order to obtain a knowledge of the eruption beneath. Thus, after scratching off the scales in psoriasis, a bleeding corium is seen; after the removal of the crusts of farus, we find a pale red depression, covered with shining skin; after the dislodgement of the scabs of syphilis, we have a greater or less loss of substance, and a base covered with exudation; in eczema, a moist, excoriated, and in seborrhœa a dry, pale-red surface.

The microscope affords important assistance in the diagnosis of cutaneous diseases. In the progress of our work we shall give prominence to the results which we have so far obtained in the microscopic investigation of morbid portions of the skin. We will only now say that in many diseases of the skin a conclusion as to the true nature of the disease can be reached alone by the help of the microscope, as in that form known as eczema

marginatum, which has lately been the subject of so much scientific controversy.

Chemical analysis will furnish an explanation of many conditions, especially in regard to the products of secretion. In many cases the aspect of the disease may be changed, and the diagnosis rendered correspondingly difficult by repeated attacks, by preceding treatment, and by the complication of several diseases. No description, however extended, can preclude mistakes in such cases; the truth can be arrived at only by experience, and a study of the course of the disease. In every doubtful case we must leave the diagnosis unsettled until further development renders it certain.

As to subjective phenomena, it will be sufficient to hint that we must expect to find many doubtful declarations which stand in opposition to the objective conditions, and this, too, far oftener than one generally supposes. The previous history and assertions of the patient are, as a rule, to be considered of relatively little value.

ETIOLOGY.

The skin, like any other organ of the body, may be affected by itself *idiopathically*, or, *symptomatically* in consequence of pathological processes in other organs.

The symptomatic diseases of the skin depend either on general affections, the so-called *dyscrasiæ*, or are caused by diseases of certain organs. The connection existing between these states is as yet certainly involved in obscurity, and we must be satisfied with the fact alone as resulting from clinical experience, without being able to furnish the physiological explanation for it.

The following are the cutaneous diseases which are connected with blood-disorders, the so-called *dyscrasiæ*:

All contagious diseases of the skin, acute and chronic; measles, scarlet fever, small-pox, syphilis, typhus exanthematicus, etc.

Morbid processes in the skin are likewise connected with the dyscrasia which goes by the name of scrofula, as, especially, lichen scrofulosorum and lupus; in the advancing stage of tuberculosis we have the pityriasis tabescentium, and increased

secretion of sweat (hyperhydrosis); and, in persons who have been reduced by various diseases, the *acne cacheticorum*. Poor nourishment, anæmia, and chlorosis, sometimes occasion seborrhœa, acne, effluvium capillitii; certain obstinate eczemas are connected with the so-called malarial disorders.

Of the diseases of single organs which are accompanied with affections of the skin, we may mention hypertrophy and disease of the valves of the heart; with these appear cyanosis and œdema, and, later in the disease, scattered effusions of blood, the so-called petechiæ; with diseases of the liver we have icterus, urticaria, and pruritus cutaneus. Urticaria and eczema are very often dependent upon diseases of the stomach, especially with disturbances of digestion; general or local depositions of pigment may be associated with hypertrophy of the spleen as with that of the liver. Pruritus cutaneus is not an unfrequent accompaniment of renal diseases, especially morbus Brightii.

A number of skin-diseases are connected with functional disturbances of the female sexual organs. As is known, depositions of pigment, called chloasma, and also pruritus cutaneus, occur even in the normal course of pregnancy.

Quite as striking is the association of the appearance of eczema, urticaria, and acne rosacea, with disease of the uterus and ovaries.

Many other diseases of the skin may possibly be thus connected with affections of the internal organs without one being able at present to discover with certainty their relation.

The larger number of cutaneous diseases are, however, *idiopathic*. The causes producing them are external, as: wounds, effects of temperature (burning and freezing), the action of injurious substances (salves, plasters, etc.), and the too frequent and too mechanically intense use of water (shower and stream douches). One class of skin-diseases is caused either directly by the operation of vegetable and animal parasites, or indirectly by the irritation which they produce, and the consequent use of the nail in scratching.

There are also other elements which have a bearing on the form and frequency of cutaneous diseases. Among these are:

a. *Age*. In infancy, seborrhœa, strophulus, intertrigo, and

diphtheritis, are of frequent occurrence. During the period of dentition transient erythemata and urticaria occur; vaccination likewise is a source of inflammations of the skin—although far less frequently than generally believed. Prurigo may date from the first year of life, lichen scrofulosorum from the second year, lupus from the third, and psoriasis somewhat later. The time of youth and manhood is in general less disposed to diseases of the skin; while in old age, besides the physiological changes occurring, we frequently find new formations (molluscum, milium, deposits of pigment) and also pruritus cutaneus.

b. *Sex*. Certain affections of the skin are far more frequent in females than in males. We treat of this later.

c. *Occupation* becomes the source of many so-called trade-diseases. Thus, we find callus on very characteristic places in various trades, eczema on those who work with acrid fluids, as lye, and, near fires, in washer-women, bakers, and firemen; finally, the material manufactured under certain circumstances has an injurious influence, as, for example, tar.

d. *Climate* is not without its influence on the frequency of cutaneous diseases, as is shown by the extreme frequency of sudamina in the warm seasons of the year, and in warm climates. Moreover, certain forms of disease are connected with certain portions of the globe; thus lepra (elephantiasis Græcorum) is found principally in Norway and the Grecian Archipelago, and the bouton d'Alep in Asia Minor and Persia, etc.

e. The *diet* has so far an influence on the appearance of diseases of the skin, that in many persons the indulgence in certain kinds of food is immediately succeeded by an attack of urticaria. The connection between the appearance of scorbutic hæmorrhages and the partaking largely of very salt food, as salted beef, has lately been found to be very probable.

f. The *internal use of certain medicines* may occasion eruptions on the skin; a form of acne occurs from the use of iodine, and a form of urticaria may follow the exhibition of the balsams, copaiba, cubebs, and turpentine.

Finally, certain diseases of the skin must be attributed to *hereditability*, which descend from parents to children, or may skip over a generation and first attack the grandchildren. Such a transmission seems to be demonstrated in psoriasis, ich-

thyosis, and pigmentary anomalies. We can confirm the disposition to inheritance of eczemas, which has been emphasized by VIEL.

It may be remarked that it was formerly customary to consider certain dyscrasias, especially scrofula and rachitis, as the most frequent causes of skin-diseases in children, and that care was taken not to remove eruptions by local means, because it was thought that a salutary source of excretion would thus be dried up, and disease of some internal organ would be sure to follow. If, however, we inquire into the proportion of brain-diseases, for instance, and compare them with the diseases of the skin in children, the proportion is far too small; whereas now, when skin-diseases are treated locally, the proportion of diseases of the brain should have greatly increased, which no physician, familiar with the subject, will assent to.

COURSE.

We have already remarked, in the section on diagnosis, that certain diseases of the skin are characterized by their occupying certain localities and running definite courses. First, as to locality; this is in many cases accidental, or determined by laws as yet unknown to us; but each attack predisposes to a subsequent one. Some diseases occur exclusively, or most commonly, on the extensor surface of the joints and outer sides of the limbs, as psoriasis, prurigo, and lichen urticatus; others, on the contrary, are found generally in the flexures of the joints and the inner sides of the extremities, where the skin is tender, as eczema.

The distribution of the cutaneous capillaries without doubt exercises essential influence upon the appearance of eruptions, and certain vascular tracts determine the circumscribed form of most of the macular eruptions; even the diffuse rash of a developing erysipelas is in its appearance and progress evidently connected with the distribution of the blood-vessels, for it presents an aspect which, as BILLROTH has rightly observed, reminds one of that produced by artificial injection.

The form of many inflammations of the skin demonstrates their connection with the lymphatics, as the lines of redness in lymphangitis and in erysipelas.

Those diseases of the skin are most remarkable whose groups of efflorescences are clearly connected with the distribution of the nerves: the eruptions of herpes zoster, for exam-

ple, are traced, as has been proved, to the subdivisions of the sensitive spinal nerves of the skin, while ichthyosis suggests the idea of a trophoneurosis. The natural divisions of the skin, as carefully studied by C. LANGER, appear in many cases to have an influence upon the distribution and grouping of eruptions, but no fixed rule has yet been ascertained.

The manner of progress presents characteristic peculiarities in many cases. First, the depth to which the morbid process extends must be considered; the disease involves either the papillary layer alone, or reaches more or less down into the tissue of the cutis; or, finally, it may extend deep into the subcutaneous cellular tissue. Inflammatory processes which run their course in the superficial layers of the cutis are all erythematous; in these the destructive process is relatively insignificant, and the reparation is therefore nearly perfect. Phlegmonous inflammations, on the other hand, which embrace the cellular tissue and cause considerable destruction by suppuration, never admit of a complete restoration of the lost substance, but the repair is effected by means of a cicatrix.

Eruptions may either complete their course in those places where they originate, without essentially affecting the neighboring parts, or they may invade the neighboring parts. An acne-pustule, for example, will run its course and dry up with scarcely a perceptible inflammation of the adjacent parts, while an ecthymatous pustule occasions inflammation of the surrounding tissue, swelling of the glands, and may result in an ulcerative process.

A number of cutaneous diseases are characterized by a peculiar manner of development, the "*serpiginous character*," the disease getting well at its point of origin, while it extends peripherally. We have already mentioned that syphilitic sores especially have this serpiginous character. We must be careful to distinguish from this the mere confluence of several eruptions which are near each other; for the original eruption may remain unchanged in its nature, while the form of the eruption may be continually modified by such a confluence.

We should here mention that the extension of many diseases, that is, those produced by the vegetable parasites, depends on the growth and extension of the mycelium, as in

pityriasis versicolor, herpes tonsurans, and eczema marginatum.

The marks which many skin-diseases leave behind them are well worth attention. Of those which are of value etiologically we may mention discolorations and scars. The exanthemata may occasionally result in the loss of some of the organs of sense. When speaking of variola, we will mention those sad cases which run their course with the ruin of one or both eyes. Even whole members may be lost from the destruction of their soft parts, as in elephantiasis Græcorum. In conclusion, we may allude to those affections of the internal organs which appear as sequelæ of cutaneous diseases, especially those of the lungs and kidneys, which attend severe prurigo, and also the marasmus which follows lichen ruber, prurigo, and elephantiasis Græcorum.

THERAPEUTICS.

To introduce here the whole series of internal remedies which in ancient and modern times have been employed in diseases of the skin, would require us to include nearly the whole materia medica. It is sufficient to state that the most of the medicines formerly used, as baryta, sulphur, viola tricolor, dulcamara, etc., are inefficacious. Of course, however, all medicaments which are of service in diseases of the internal organs have also an influence upon the cutaneous affections which are dependent on them; especially worthy of mention are arsenic, mercury, quinine, iron, cod-liver oil, iodide of potassium, and carbolic acid.

We place by far the greatest value upon external treatment.

Water, in the form of baths, douches, fomentations, etc., is a very important remedy.

Sulphur is employed in the Vlemingx solution, in a paste with glycerine and alcohol, or as an ointment, and also in the natural sulphur springs (Baden, Aachen, Mehadia, etc.).

Tar is used, its three varieties being known as oleum fagi, ol. cadini, and ol. rusci. All three kinds are alike in their operation, and that form may be considered as the most efficacious which has the greatest consistency. Tar is also used in combination with other remedies, as alcohol, ether, glycerine,

and *sapo viridis*. When we come to speak of special diseases we will describe the various kinds of tar and their manner of application, and also the eruptions produced on the skin by its use.

The distilled products of tar, carbolic acid, resinon or resinon, have been lately used with success, and in a manner more agreeable to the patient.

Soaps play an important part in the treatment of skin-diseases, and especially the soap made from potash (*sapo viridis*).

Caustics are of service, especially in chronic infiltrations of the skin. That most used is nitrate of silver (*lapis infernalis*), either in substance or in solutions of various strengths. The following caustics also deserve mention: caustic potash in substance, stick-form, or in solution, corrosive sublimate, sulphuric, nitric, chromic, and hydrochloric acids; the Vienna paste, consisting of equal parts of caustic potash and quicklime mixed with alcohol; arsenic in the form of a paste made of arsenic, cinabar and lard; the paste of LANDOLFI, composed of chloride of bromium, chloride of zinc, and chloride of antimony; the chloride of iron; PLENCK's paste, containing camphor, carbonate of lead, corrosive sublimate, alum, spirit of wine, and acetum vini, equal parts; chloride of zinc, alum, calomel, etc., etc.

Very recently vulcanized caoutchouc-cloth has been successfully employed in certain cutaneous eruptions (HARDY, HEBRA).

An important plan of treatment is the expectant, that is, waiting and leaving the process to run its spontaneous course, a method which can hardly be sufficiently recommended in the acute diseases of the skin.

CLASSIFICATION.

The oldest classification is that of MERCURIALIS, who, following GALEN's example, divides eruptions of the skin into such as attack the head, and those that affect the rest of the body. The former were treated under the following heads: 1. De defluvio; 2. De alopecia et ophiasi; 3. De calvitie; 4. De canitie; 5. De morbo pediculari; 6. De porriginē; 7. De achoribus et favis; 8. De tineā; 9. De psydraciis, helcydriis, sycosi et exanthematibus; 10. Leuce, Alphus, and those in which the skin is rough; 11. Pruritus; 12. Scabies; 13. Lepa; 14. Lichenes.

LORRY divides skin-diseases into A, idiopathic, and B, symptomatic. The former, which affect the skin, are subdivided with reference to its thickness and structure, and also as to whether they come from the action of

poisons or the stings of insects; the latter (B) into such as affect only a portion of the skin, and those involving the whole surface of the body; and these again into those accompanied with fever, and those without fever.

DENTI and FUCHS follow this system. PLENCK divides diseases of the skin according to the form of their pathological products: 1. Maculæ; 2. Pustulæ; 3. Vesiculæ; 4. Bullæ; 5. Papulæ; 6. Crustæ; 7. Squamæ; 8. Callositates; 9. Excrescentiæ; 10. Ulcera; 11. Vulnera; 12. Insecta; 13. Morbi unguium; 14. Morbi pilorum.

This classification was followed by BATEMAN, WILLAN, BIETT, CAZENAVE and SCHEDEL, and GIBERT.

WILLAN's system:

1st Order. Papulæ. To this belong: 1. Strophulus; 2. Lichen; 3. Prurigo.

2d Order. Squamæ; 4. Lepra; 5. Psoriasis; 6. Pityriasis; 7. Ichthyosis.

3d Order. Exanthemata; 8. Rubeola; 9. Scarlatina; 10. Urticaria; 11. Roseola; 12. Purpura; 13. Erythema; 14. Erysipelas.

4th Order. Bullæ; 15. Pemphigus; 16. Pompholyx.

5th Order. Pustulæ; 17. Impetigo; 18. Porrigo; 19. Ecthyma; 20. Scabies; 21. Variola.

6th Order. Vesiculæ; 22. Varicella; 23. Vaccina; 24. Herpes; 25. Rupia; 26. Miliaria; 27. Eczema; 28. Aphthæ.

7th Order. Tubercula; 29. Phyma; 30. Molluscum; 31. Vitiligo; 32. Acne; 33. Sycosis; 34. Lupus; 35. Elephantiasis; 36. Framboesia.

8th Order. Maculæ; 37. Ephelis; 38. Nævus.

9th Order. Excrescentiæ; 39. Verruca; 40. Clavus; 41. Callus.

ALBERT endeavored to classify diseases of the skin according to their natural relationship, and created a natural system; he divided cutaneous diseases into the following twelve classes:

A. Dermatoses eczematenses; to this belong erythema, erysipelas, pemphigus, zoster.

B. Derm. exanthémateuses: variola, vaccina, varicella, roseola, rubeola, scarlatina, miliaria.

C. Derm. teigneuses: Achor, porrigo, favus, trichoma.

D. Derm. dartreuses: Herpes, varus, melitagra, esthiomenos.

E. Derm. cancéreuses: Carcinoma, keloïs.

F. Derm. lépreuses: Leucé, spiloplaxis, elephantiasis, radesyge.

G. Derm. véroleuses: Syphilis, mycosis.

H. Derm. strumeuses: Scrophula, malleus.

I. Derm. scabieuses: Scabies, prurigo.

K. Derm. hémateuses: Peliosis, petechiæ.

L. Derm. dyschromateuses: Pannus, achroma.

M. Derm. hétéromorphes: Ichthyosis, tylosis, verruca, onychosis, dermatolysis, nævus.

As is evident, there are many new names created in this system which only occasion confusion in the nomenclature.

DUCHESNE DUPARC, formerly ALIBERT's assistant, adds his system to the natural one, and divides skin-diseases into eleven classes: 1. Inflammations of the skin, as, erythema, erysipelas, pemphigus, ecthyma, urticaria, herpes, etc.; 2. Exanthemata, scarlet fever, variola, etc.; 3. Eruptions with crusts, simple, achor, and parasitic, favus; 4. Lichenous eruptions, psoriasis, ichthyosis; 5. Degenerations of the skin, cancerous and leprous (elephantiasis); 6. Scrofulæ, lupus; 7. Scabies; 8. Hæmorrhages; 9. Anomalies of pigment; 10. Hypertrophies of the skin, capillary (nævus), follicular, tubercular, and accidental; 11. Syphilides.

PETER FRANK divided skin-diseases into two great groups; acute exanthemata and chronic impetigines, and these latter again into idiopathic and symptomatic. SCHÖNLEIN held to this principle of division.

ERASMUS WILSON's system:

1. Affections of the corium.
2. Affections of the sudoriparous glands.
3. Affections of the sebaceous glands.
4. Affections of the hair and hair-follicles.

To class 1 belong: A. Inflammations; B. Papillary hypertrophies; C. Vascular anomalies; D. Disturbances of sensibility; E. Anomalies of pigment.

A. Inflammations he again divides into:

- a. Those with congestion; here belong α . Of special nature: rubeola, scarlatina, variola, varicella, vaccina; β . Of non-specific nature: erysipelas, urticaria, roseola, erythema.
- b. With effusion: α . Asthenic: pemphigus, rupia; β . Sthenic: herpes, eczema, sudamina.
- c. With the formation of pus: impetigo, ecthyma.
- d. With deposition: lichen, strophulus, prurigo.
- e. With desquamation: lepra, psoriasis, pityriasis.
- f. Caused by parasitic animals: scabies.

B. Papillary hypertrophy: verruca, tylosis, clavus, pachulosis.

C. Vascular anomalies; here belong: teleangiectasia, purpura.

D. Disturbances of sensibility: pruritus.

E. Anomalies of pigment: a. Increase; b. Decrease; c. Alteration in pigment; d. Chemical discoloration with the oxide of silver.

2. The diseases of the sweat-glands he divided likewise into augmented, diminished, and altered secretion.

3. The affections of the sebaceous glands are treated in the same manner, as also—

4. The diseases of the hairs and hair-follicles.

This system is thoroughly anatomical.

CHAUSSE divides diseases of the skin into: 1. Inflammations of the skin; 2. Anomalies of secretion; 3. Hypertrophies; 4. Degenerations; 5. Hæmorrhages; 6. Disturbances of sensation; 7. Parasitic; 8. Diseases of the appendages of the skin.

BAZIN's system: 1. Deformities: nævi, vitiligo; 2. Surgical affections:

a. Mechanical, as wounds; b. Artificial, from parasites; 3. Internal diseases, exanthems, etc.; 4. Pseudo-exanthems, phlegmasiæ purpura, herpes, diatheses.

HARDY, in his classification, pays more attention to the nature of the malady than to its external form, and divides the diseases of the skin into ten groups: 1. Maculæ and deformities which are congenital or hereditary: ephelis, vitiligo, lentigo, warts, molluscum, ichthyosis, keloid; 2. Local inflammation: erythema, urticaria, etc.;* 3. Parasites: scabies, favus, etc.; 4. Febrile eruptions: small-pox, scarlet fever; 5. Symptomatic eruptions: herpes, sudamina, etc.; 6. Lichenous: as eczema, psoriasis, lichen; 7. Scrophulides: as lupus; 8. Syphilides; 9. Cutaneous cancer; 10. Exotic skin-diseases, as elephantiasis.

BÄRENSPRUNG's system is founded on physiological grounds:

I. Disturbances of innervation: a. Derangement of sensibility (pruritus); b. Motor disturbances; c. Local derangements.

II. Derangements of secretion: seborrhea, hyperhydrosis, anhydrosis.

III. Derangement of nutrition: a. Emphysema cutaneum; b. Œdema cutaneum; c. Hyperæmia and anæmia; d. Hæmorrhages; e. Inflammations: 1. Diffuse; α. Erythematous; β. Phlegmonous; γ. Eczematous; 2. Exanthematic; 3. Furunculous; f. Ulcers (1. Idiopathic; 2. Malignant; 3. Dyscrasic); g. Gangrene; h. Pigment formation; i. Hypertrophy (1. Epidermal hypertrophy; 2. Papillary hypertrophy; 3. Vascular hypertrophy; 4. Hypertrophy of the corium; 5. Hypertrophy of the hair-follicles and cutaneous glands); k. Carcinoma; l. Morbid conditions of the hairs; m. Morbid conditions of the nails.

Dr. BUCHANAN (*Edinb. Med. Journ.*, 1865) presents a natural system:

1st class. Inflammations: erythematous, eczematous, phlegmonous.

2d class. New formations: A. Homologous: a. Of the epidermis; b. Of pigment; c. Of cutis; B. Heterologous: pseudoplasmata, neoplasmata.

3d class. Hemorrhages.

4th class. Diseases of the accessory organs.

5th class. Diseases having common causes: a. From parasites; b. Typhus and febrile exanthemata.

In the further division into genera, BUCHANAN notices that the division into erythemata and eczemata, seen by the presence of vesicles, papules, etc., is a correct one, for the skin reacts variously under different irritations.

Under erythematous inflammations he classes: 1. Erythema simplex, papulatum, squamosum, nodosum, strophulosum; 2. Herpes idiopathicus, ab ingestis, uterinus, dentin.; 3. Dermatitis idiopathica (erysipelas), symptomatica; 4. Pemphigus.

Eczematous inflammations: These he makes I. Eczema; 1st grade, siccum, erythematodes, papulatum, lichen simplex, prurigo; 2d grade, eczema

[* Author leaves out third class, artificial eruptions following the local application of certain substances.—L. D. B.]

humidum (vesiculare, rubrum, pustulosum); 3d grade, dry: Lichen exudat. ruber, eczema squamosum; II. Acne; III. Ecthyma; IV. Psoriasis.

The pathologico-anatomical system proposed by HEBRA embraces twelve classes:

Class I. Hyperæmiæ cutanæ.

A. Active hyperæmiæ.

a. Idiopathic active hyperæmiæ.

1. Erythema traumaticum.
2. " caloricum.
3. " ab acribus seu venenatum.

b. Symptomatic hyperæmiæ.

1. Erythema infantile, or roseola infantilis.
2. " variolosum, or roseola variolosa.
3. " vaccina.

B. Passive hyperæmiæ.

a. Idiopathic passive hyperæmiæ.

1. Livedo mechanica, artificial lividity.
2. " calorica.

b. Passive, symptomatic hyperæmiæ: cyanosis, morbus cœruleus, cyanopathia, atelectasia, anæmatosis, *maladie bleue*.

Class II. Anæmiæ cutanæ.

A. Anæmia of the skin from absolute want of blood.

- a. Anæmia of the skin from hæmorrhage.
- b. " " " " from disease.

B. Anæmia of the skin from abnormal innervation.

Class III. Anomalies of the cutaneous glands.

I. Morbid change of the sebaceous glands and their secretion.

A. Too abundant secretion of sebum, stearrhœa, fluxus sebaceus, seborrhœa, acne sebacea, schmeerfluss, gneis.

- a. Seborrhœa capillitii.
- b. " faciei.
- c. " of the external genitals.

B. Diminished secretion of sebum.

C. Deficient excretion, or retention of sebum.

- a. Comedo.
- b. Milium, or grutum, strophulus albidus, or candidus.
- c. Molluscum contagiosum.

II. Morbid condition of the secretion of sweat.

A. Quantitative anomalies of secretion.

- a. Increased secretion, hyperhydrosis.
- b. Anhydrosis.

B. Qualitative alteration of the sweat.

Class IV. Exudations (ausschwitzungen).

A. Exudative eruptions with acute course:

- a. acute, exudative, contagious eruptions: Measles (rubeola, morbilli, rougeole).

Scarlet fever, scarlatina.

Variola, small-pox, petite vérole.

Vaccina.

b. acute, exudative, non-contagious eruptions

1st Group. Polymorphous erythemata.

Erythema exudativum multiforme.

" nodosum.

Pellagra.

Acrodynia.

Roseola.

Urticaria.

2d Group. Dermatitis, true inflammations of the skin.

a. Dermatitis idiopathica.

Dermatitis traumatica.

" venenata.

" calorica.

" " ambustionis, burns.

" " congelationis.

b. Dermatitis symptomaticæ.

a. Dermatitis erythematosæ, erysipelas.

b. " phlegmonosa: anthrax, furuncle, phyma, glanders, maliasmus, dissection pustule, pustula maligna.

3d Group. Phlyctænæ, herpes:

a. Herpes labialis.

b. " præputialis or progenialis.

c. " zoster (zona).

d. " iris and circinatus.

Miliaria.

Pemphigus acutus or febrilis.

B. Exudative eruptions with chronic course.

1st Group. Squamous eruptions, psoriasis or lepra Willani, lichen (exudativus).

a. Lichen Scrofulosorum.

b. " exudativus ruber.

Pityriasis rubra.

2d Group. Pruriginous eruptions.

Eczema.

Acute eczema.

a. Eczema acutum faciei.

b. " " genitalium.

c. " " manuum et pedum.

d. " " universale.

Chronic eczema.

a. Eczema chronicum capillitii.

b. " " faciei.

c. " " trunci.

- d. Eczema chronicum genitalium.
- e. " marginatum.
- f. " articularum.
- g. " manuum, pedum, et digitorum.
- h. " extremitatum.

Eczema mercuriale seu Hydrargyria.

Scabies, itch.

Prurigo.

3d Group. Pimply eruptions.

Acne disseminata.

Sycosis (acne mentagra).

Acne rosacea (gutta rosea, coppery face).

4th Group. Pustular eruptions, dermatoses pustulosæ:

Impetigo, ecthyma.

5th Group. Bullous eruptions: pemphigus chronicus.

1. Pemphigus vulgaris.

2. " foliaceus — (Cazenave), rupia.

Class V. Cutaneous diseases dependent on effusion of blood.

Hæmorrhagiæ cutanæ.

1. Idiopathic hæmorrhages:

Extravasations from contusion.

" " wounds.

" " mechanical vascular disturbances.

2. Symptomatic hæmorrhages:

Purpura rheumatica (peliosis rheumatica, rheumatokelis)

" simplex.

" papulosa (Hebra).

" hæmorrhagica (morb. maculosus Werlhofii).

Variola nigra seu hæmorrhagica.

Class VI. Hypertrophies.

A. Hypertrophy of the epidermis.

1. Lichen pilaris.

2. Tyloma, collections of epidermis in layers.

3. Clavus, corn.

4. Pityriasis simplex.

5. Ichthyosis, fish-scale eruption.

6. Verruca, warts.

7. Nævus verrucosus.

B. Hypertrophy of pigment.

1. Lentigo, freckles.

2. Chloasma, liver-spot.

3. Melasma.

4. Nævus spilus.

5. Pityriasis nigra.

C. Hypertrophy of the corium.

Elephantiasis, pachydermia.

- D. Hypertrophy of the follicles :
 - 1. The sebaceous glands.
 - 2. The hair-follicles.
- E. Hypertrophy of appendages of skin :
 - a. Of the hairs.
 - 1. Polytrichia, congenital superfluity of hair.
 - 2. Trichauxe, increase in length and thickness of hairs.
 - 3. Dermatokeras, cornu cutaneum.
 - b. Of the nails.
 - 1. Polyonychia, supernumerary nails.
 - 2. Onychogryphosis, uncommon thickening of the nail-substance.

Class VII. Atrophies.

- A. Atrophy of the epidermis.
- B. " of pigment.
 - Leukopathia.
 - 1. Leukopathia congenita.
 - 2. " acquisita.
- C. Atrophy of the cutis.
- D. " " " follicles.
 - 1. Atrophy of the sebaceous follicles.
 - 2. " " " hair-follicles.
- E. Atrophy of the appendages of the skin.
 - a. Of the hairs ; a. Of the hair-pigment.
 - 1. Peliosis ; senilis, præmatura, circumscripta.
 - β. Of the hair itself.
 - 2. Alopecia (senilis, præmatura, circumscripta, venerea).
 - b. Of the nails.
 - Onychatrophia.

Class VIII. New formations, neoplasmata.

- A. Epidermal new formations.
 - B. Cellular new formations.
 - 1. Molluscum simplex et pendulum, the later stages of.
 - 2. Acne rosacea, and the various
 - 3. Condylomatous excrescences, so called.
 - C. Fibroid neoplasms — formation of callus :
 - 1. Scars, cicatrices.
 - 2. Keloid.
 - D. Fatty tumors — lipomata.
 - E. Teleangiectasiæ, vascular new formations.
 - Nævus vascularis : α, simplex ; β, flammeus ; γ, fungosus.
 - F. Cholesteatoma.
 - G. Anomalous bony substance in the skin.
 - H. Melanosis.
- Class IX. Pseudoplasmata.
- A. Cancer, carcinoma :

1. Fibrous cancer, scirrhus.
2. Medullary cancer, cancer medullaris.
 - a. Cancer melanodes.
 - b. Chimney-sweeper's cancer.
 - c. Cancer hæmatodes.
 - d. Carcinome éburné (Alibert).
- B. Tubercle.
- Class X. Ulcerative processes of the skin.
 - Ulcera cutanea idiopathica.
 - “ “ symptomatica.
- Class XI. Parasitic.
 - A. From vegetable formations.
 1. Favus. a. Herpes tonsurans; b. Pityriasis versicolor.
 2. Alopecia areata.
 - B. From animal parasites.
 1. Pediculi.
 - a. Ped. humani capitis.
 - b. “ “ corporis.
 - c. “ “ pubis.
 2. Acarus folliculorum.
 3. Sarcoptes hominis, acarus scabiei (itch-insect).
 4. Leptus autumnalis.
 5. Pulex penetrans.
- Class XII. Neuroses of the skin.
 - A. Hyperæsthesia cutis.
 1. Dermatalgia, neuralgia of the skin.
 2. Pruritus cutaneus, prurigo sine papulis, prurigo latens.
 3. Dermatotyposis (intermittens cutanea, intermittent neuralgia of the skin).
 - B. Anæsthesia cutis.
 1. Anæsthesia partialis.
 2. “ universalis.
 - C. Dermatospasmus, cutaneous cramp.
 - Cutis anserina.

We here present a new system, although fully aware that a classification which will prove entirely satisfactory cannot ever be framed with the changing elements of which it must necessarily be composed. We might present one founded upon a histological basis as it now stands, which would at least be free from the charge of being superficial, but the purely histological stand-point cannot be adopted; the etiology, clinical history, character, and course of the disease, must be taken into consideration. Certain groups will be admitted which are of

older date, and which have been introduced by authors who did not enjoy the advantage of the anatomical and pathological researches with which our age is favored. Thus prurigo lichen and psoriasis still remain in the class of inflammations, although on the ground of histology alone they probably belong more appropriately among the hypertrophies or new formations.

Our system may be considered essentially a simplification of that of HEBRA, with the omission of certain classes, and the association of some groups.

Class I. *Anomalies of Secretion :*

A. Of the sebaceous glands.

a. Increase of secretion—seborrhœa.

b. Accumulation of sebum: comedo, milium, vitiligoidea, molluscum contagiosum, sebaceous tumors, concretions.

c. Diminution of secretion, xeroderma.

B. Anomalies of secretion of the sweat-glands, hyper- and anhidrosis, brom- and chromhidrosis.

Class II. *Inflammation :*

A. Contagious.

a. Acute, running a typical course: Small-pox, scarlet fever, measles.

b. From infection with animal poisons: pustula maligna, dissection-wounds, bites of serpents, maliasmus.

c. Diphtheritic inflammation.

B. Non-contagious inflammations.

a. Erythematous: erythema papulatum, gyratum, annulare, iris, nodosum, urticans, roseola e vaccinatione, urticaria, lichen urticatus, pellagra, erysipelas.

b. Phlegmonous: furuncle, anthrax, pseudo-erysipelas.

c. Vesicular: herpes labialis, præputialis, zoster, iris, circinnatus, sudamina, eczema.

d. Bullous: pemphigus.

e. Pustular: acne, acne rosacea, sycosis.

f. Squamous: psoriasis, pityriasis rubra.

g. Papular: prurigo, lichen scrophulosorum, lichen ruber.

C. Traumatic inflammation.

- a. From mechanical causes : erythema traumaticum, ex-coriationes.
- b. From chemical cause : cauterization, vesication.
- c. From temperature : ambustio, gelatio.

Class III. *Hæmorrhages* :

Purpura simplex, rheumatica, papulosa, scorbutica : morbus maculos. Werlhofii, ecchymomata.

Class IV. *Hypertrophies* :

- A. With epithelial elements predominating : lichen pilaris, tyloma, clavus, ichthyosis, verruca, cornu cutaneum, hypertrophies of the hairs (polytrichia), hypertrophy of the nails (onychogryphosis).
- B. With connective-tissue elements predominating :
 - 1. Circumscript. : condylomata, framboësia.
 - 2. Diffuse : elephantiasis arabum, sclerema.

Class V. *Atrophies* :

Senescence, alopecïa areata : atrophy of the cutis, cicatrices of pregnancy, atrophy after preceding skin-diseases, cicatrices, atrophy of the hairs, alopecïa.

Class VI. *New Formations* :

- a. Prevailingly diffuse : lupus, syphilis, elephantiasis Græcorum.
- b. Tumors : fibroma molluscum, papillary tumors, ke-loid, angioma, lipoma, adenoma, sarcoma, and carcinoma.

Class VII. *Anomalies of Pigmentation* :

- A. Want of pigment : albinismus, vitiligo (leukopathia acquisita).
- B. Increase of pigment : nævus, ephelis, lentigo, chloasma, melasma, morbus Addisonii, argyria, etc.

Class VIII. *Neuroses* :

Disturbances of sensibility, disturbances of motion, angio-neuroses.

Class IX. *Parasites*:

A. Animal.

1. Living in the skin:

Acarus scabiei, acarus folliculorum, filaria medinensis, pulex penetrans, ixodes ricinus.

2. Living at times on the skin:

Cimex lectularius, culex pipiens, leptus autumnalis, phthirius inguinalis, pediculus capitis, pediculus vestimenti.

B. Vegetable.

Favus, herpestion surans, pityriasis versicolor, eczema marginatum, onychomykosis, sycosis parasitaria.

SPECIAL DISEASES.

CLASS I.

ANOMALIES OF SECRETION.

THE secretion of the sebaceous glands is designed to give a certain softness and flexibility to the epidermal structures of the skin.

This secretion may be morbidly altered, and that both quantitatively and qualitatively. Quantitatively it may be either increased or diminished.

A.—INCREASE OF THE SEBACEOUS SECRETION.

SEBORRHŒA.

Syn. *Stearrhœa*, *Acne Sebacea*, *Fluxus Sebaceus*, *Varus Sebaceus*, *Seborrhagia*, *Steatorrhœa*, also *Pityriasis*, *Porriago*, *Tinea Furfuracea*, and *Amiantacea seu Asbestina*, *Pityriasis Tabescentium*, *Scrofulosorum*, *Ichthyosis Sebacea*, *Schmeerfluss*, *Gneis*, etc.

By *seborrhœa* we understand an increased secretion of sebum, which, mingled with epidermal scales, appears on the surface of the skin in the manner to be described.

The morbid sebaceous secretion is either a *local* or *general* one. Local *seborrhœa* comes especially on the scalp, nose, region of the beard, and on the genitals. The changes on the skin are various according as the solid constituents of the sebum, the stearin and margarin, or the fluid, as the olein, predominate. In the former case, collections of sebum have more the appearance of scales (*acne sebacée sèche*), and then it is called *seborrhœa amianthacea*. On the hairy scalp the disease makes its appearance in the form of scales and crusts, chiefly in children, during the first year of life, but also in adults, both in

middle life and old age, especially in females who suffer from menstrual disorders. Syphilis is a frequent cause of this malady. When the dried sebum is separated from its bed, there are noticed on its under surface fine villous prolongations, which are the masses of sebum collected in the ducts of the glands.

1. *Seborrhœa of the Scalp (Seborr. Capillitii)*.—The secretion of the sebaceous glands in the foetus is greater during intra-uterine life than subsequently. This abundant secretion continues on the scalp also during the first year of extra-uterine life; and if the sebum is allowed to collect here, and gather dirt and dust from without, while the augmented secretion continues, we may finally have crusts several lines in thickness formed, and the whole hairy scalp may be enveloped in a thick layer of sebum. At the end of the first year of life, when the permanent hairs begin to grow, the crusts are gradually detached by their growth, if they have not been already removed by other means. When the crusts remain for a long time, the seborrhœa is generally complicated with eczema, for the collected mass of sebum decomposes, macerates, and irritates the skin, and produces redness and moisture on it. The same disease appears also as thick scales which cause the hairs to adhere to one another in little bundles (*pityriasis amianthacea*).

The scales formed in the seborrhœa capillitii of adults are not so thick, as a rule; there is either only a thin, yellowish scurf collected, or dry scales are formed in great quantity, the former occurring most frequently at the time of puberty in anæmic and tubercular persons, or in connection with disorders of the menstruation, while the latter form is by no means infrequently found in those enjoying excellent health. Such furfuraceous eruptions are most frequent between the ages of twenty and twenty-six, and are often accompanied with effluvium capillitii.

In old age we find a seborrhœa which is connected with the changes in the sebaceous glands, to be described hereafter. The scalp, for the most part, is devoid of hairs, and covered with a dirty, yellowish-brown, easily-removable crust.

In syphilis, the loss of the hair is connected with a seborrhœa, which takes the form of dirty-yellow masses of sebum, thin and firmly adherent.

2. *Seborrhœa Faciei*.—On the face we generally find seborrhœa oleosa; that is, the oily portion of the sebaceous secretion is increased. The skin of persons so affected has a shining appearance, when it is kept clean; when, on the other hand, this is neglected, dust and dirt adhere to the sebaceous masses, which are thereby changed to a dark color, and that portion of the skin has a soiled appearance.

3. *Seborrhœa Nasi*.—Seborrhœa is frequently found on the nose associated with enlarged cutaneous veins. The nose, as well as the forehead, presents a shiny appearance, and the ducts of the sebaceous glands are enlarged. If a piece of blotting-paper or a soft linen cloth is passed over such places, it absorbs the oil, generally dark-colored from dust. The enlarged veins give to the nose a reddish look, which is more striking in cold weather.

4. *Seborrhœa Genitalium*.—Seborrhœa is of very frequent occurrence upon the genitals. In persons who have a narrow, phymotic prepuce, the sebum collects in too large a quantity; and, favored by the elevated temperature and moisture, as also by the contact of two surfaces of skin (prepuce and glans), it decomposes and produces inflammation of the glans (balanoposthitis). Seborrhœa is also of frequent occurrence on the inner surfaces of the labia majora.

5. *Seborrhœa Universalis* is quite rare in adults.* It presents the appearance of dried, horny-like masses, spread over large portions of the body. These are deposited in scales upon each other, corresponding to the lines in the skin (ichthyosis sebacea), or, in emaciated persons, as fine, fatty, shining scales, covering the whole surface (pityriasis tabescentium). The accumulation of sebum is a physiological occurrence during intra-uterine life; if this formation (vernix caseosa) is not removed after birth, it dries in a few days to thin lamellæ

* BIETT relates a case, and a second appeared in BAZIN's clinic (LEITZ), in a person twenty-five years of age, who finally died of morbus Brightii. The ducts of the sebaceous glands over the whole surface were obstructed with great masses of inspissated sebum, which produced swellings from the size of a lentil to that of a hazel-nut. The patient smelt like rancid butter. There was albumen in the urine. The analysis of the sebaceous masses gave—water, 357 parts; albumen, 2; gluten, 87; casein, 129; fat, 405; phosphate of soda, 7; sulphate of soda, 5; chloride of soda, 5; butyric acid, 3.

resembling straw-paper, which gradually become detached spontaneously. On some places, especially in children who are not kept clean and whose skin is tender, slight excoriations are excited, which, to the less practised eye, may cause seborrhœa to be mistaken for other diseases.

Differential Diagnosis.—It is quite possible to confound seborrhœa with other diseases, and especially with eczema, lupus erythematodes, and pemphigus foliaceus. *Seborrhœa* is distinguished from *eczema impetiginosum* in this, that, after the removal of the crusts, in the latter the skin is at first red and moist, while in seborrhœa it is pale, or slightly reddened after removing the scales; further, eczema generally extends from the scalp to the adjoining parts, forehead, neck, and ears, while seborrhœa, as a rule, is confined to the hairy parts. In eczema, the neighboring lymphatic glands are swollen; in seborrhœa, on the other hand, they are unaffected. In eczema, we have itching; seldom in seborrhœa. *Seborrhœa* differs from *lupus erythematodes* in the following respects: The masses of sebum in the latter hold firmly in the ducts of the follicles; they are commonly thin and of a greenish color; when removed, we find the skin beneath them swollen, reddened, and infiltrated, the ducts of the follicles enlarged, and some of them completely destroyed, which is quite other from the state described as existing in seborrhœa.

We can hardly mistake the disease in question for *pemphigus foliaceus*, for this latter is spread over larger tracts of skin, and the detached epidermis hangs free in many places in the form of large lamellæ; moreover, there are also excoriated patches in pemphigus; seborrhœa is usually confined to smaller parts, and, if it should exceptionally attack greater surfaces, the scales adhere firmly to their base. Bullæ are sometimes found in pemphigus, never in seborrhœa.

Prognosis.—The prognosis is, as a rule, favorable. The disease may be greatly relieved, although it cannot always be removed; it is curable in children, and when connected with disorders of menstruation, or morbid blood-states, where these causes can be remedied.

Therapeutics.—The first thing is to remove the crusts, which is done by saturating them with the greatest amount of oily

matter practicable. To accomplish this, oil is applied by means of a sponge, and a flannel cap is then put on (which may also be soaked in oil, when the crusts are very dry), and this again is covered with a cap of oiled-silk. Twelve hours suffices to macerate the crusts, even when they have adhered to the skin for a very long time, so that they can be easily removed with soap and water. If the incrustation is thin, simple frictions with oil will answer. If, after removal of the scales, the skin is pale, then all that is required is daily ablution with soap, and inunctions, as with ung. simplex, or spermaceti cum oleo. oliv. q. s. ut f. ung. molle. After this treatment has been continued for several days, we then wait and see if new scales form; in case they return, the same method of treatment is repeated for a season. If, however, the disease resists this treatment, as it may in adults, we must then make use of the *sapo viridis* (potash-soap, Kaliseife); for this purpose we recommend the kalicrème, or spiritus saponis alkalinus (HEBRA), i. e., green soap dissolved in alcohol, after the following formula:

| | | |
|-----------------------|---------|----------|
| R. Sapo viridis | | ℥ ij. |
| Spiritus vini rect. | | ℥ j. |
| Solve, filtra et adde | | |
| Spirit. lavandul. | | ℥ ij. M. |

The soap and its preparations are best used under the douche, the cold causing the glands, which are enlarged in this disease, to contract. In a seborrhœa which has lasted some time, there is also a small amount of infiltration of the skin present, and various substances in the form of ointments are useful for its removal, as oxid. zinci, carbon. plumbi, precipit. alb., each in the strength of a drachm to the ounce of ointment. The following mixture is also serviceable:

| | | |
|-------------------|---------|-------|
| R. Oxid. zinci, | | |
| Carb. plumbi āā | | ℥ j. |
| Spermaceti | | ℥ j. |
| Ol. oliv. | | q. s. |
| ut f. ung. molle. | | |

Various powders may be used with advantage, especially in seborrhœa of the genitals, as starch, semina lycopodii, talcum venetum, pulvis aluminis plumosi, pulvis oxidi zinci.

[An elegant mode of preparing the spiritus saponis alkalinus is to make use of Cologne-water instead of the mingled alcohol and spirits of lavender, thus:

| | | |
|-------------------|-----------|-------|
| R. Sapon. viridis | | ℥ ij. |
| Aquæ Coloniensis | | 3 x. |
| Misce et cola. | | |

Astringents, especially alum and tannin, and mild stimulants, are useful, either mingled with the ointments recommended above to be used alternately with the frictions with soap, or alone in solution. WILSON recommends a bichloride-of-mercury lotion, of the strength of one grain to the ounce; TILBURY FOX advises glycerol-tannin. HARDY says he has had the best results from an ointment of peroxide of iron, and also vapor-baths.

The potash-soap spoken of is best obtained by importation from Germany. It is kept at several New-York drug-stores, among which I may mention that of Mr. W. F. Mittendorf, 268 Fourth Avenue, corner of Twenty-first Street.—L. D. B.]

B.—ACCUMULATION OF SEBUM.

The secretion of the sebaceous glands collects either principally in the ducts, forming comedo; or else in the cavity of the gland itself. If the accumulation forms a papule, the disease is called milium; when the contents are fluid and form tumors, it is called follicular atheroma, and molluscum contagiosum.

1. COMEDO.

By *comedones* we understand the plugs of sebum which fill and distend the ducts of the sebaceous glands.

The mode of production of comedo is the following: The cavity of the hair-sac and sebaceous gland becomes distended with sebum and epidermis; this may take place throughout its whole length, at the lower closed extremity of the gland, or just before it opens on the surface of the skin, while the lumen retains its normal dimensions at its lower part. Both the thickness of the cutis and the length of the hair-follicles, which vary in different places, modify this considerably, and produce different methods of enlargement of the hair-follicle. Where the skin is thick and the follicle long, the sebum is easily retained at its lower extremity, while the upper, open end remains normal, or may become narrowed by some pathological alteration in the skin, and so forms the constricting portion of the follicle. (VIRCHOW).

The plug of sebum is dark-colored at its outer extremity, and, when squeezed out, the mass has the shape of a worm. We always find enlargement of the sebaceous glands in comedo,

sometimes also *enlargement of the hair-follicles*, for comedones are formed from the dilatation of both. The expressed masses consist either of roundish cells containing fatty granules, or are entirely filled with fat; between the cells also there are free oil-globules; crystals of cholesterine are very rarely found in them. There are also a great number of minute hairs lying together in their interior, and frequently the hair-sac mite, the steatozoon, or *acarus folliculorum*.

The localities occupied by comedo are, the skin of the face, breast, neck, and back, and it is only when they are produced by external injurious influences that they are found in other places, as in the case of those who work in tar. We will consider the etiology of comedo when we come to speak of acne, from which it must not be separated clinically.

Therapeutics.—The treatment of comedo is purely external; experience teaches, however, that sometimes the formation of comedo is connected with chronic constitutional diseases, as scrofula, tuberculosis, and other pathological processes, which occasion a disturbance in the nutrition of the skin; quite frequently also it is associated with disorders of menstruation. In such cases the treatment of the cause must be combined with the local therapeutics. Far oftener, however, comedo is a purely local affection. The treatment consists, first of all, in the assiduous expression of the sebaceous plugs by means of a watch-key, or with a comedo extractor, similar to an ear-spoon, after which the skin is rubbed with *sapo viridis*, or tincture of soap. When this alone does not suffice, we must try friction with a paste of sulphur made after the following formula (ZEISSL):

R. Lac sulphuris,
Glycerini,
Spirit. vini rect.,
Potass. carbonat.,
Ether sulph., ãã partes equales. Misce.

Or we may use instead the sulphur sand-soap which is applied at night; the foam remaining upon the face overnight not being removed till morning. It is in general well to make all these manipulations in the evening, because the skin is irritated and reddened by the remedies mentioned.

We allow the patient to rest after each three days' treatment, that the irritation of the skin may not be too great. MARTIN (*Brit. Med. Journ.*, 1868) recommends hydrarg. corros. subl. gr. viij, glycerini ℥j, aq. rosæ ℥iv.

[I think I express the views of American physicians when I speak against the harsh treatment in comedo: the use of the watch-key for extraction of the plugs by pressure has not been successful in my hands, nor, as far as I can learn, in the hands of others in this city. TILBURY FOX lays much more stress on the constitutional treatment, "curing dyspepsia, amenorrhœa, leucorrhœa, and such like conditions; exhibiting, in the lymphatic, iron in combination with saline aperients and cod-liver oil"—stimulating and slightly astringent lotions are good—borax, alum, and oxide-of-zinc lotions—also alkaline-washes occasionally. WILSON recommends sea-bathing. HARDY expresses himself as favoring expression of the plugs when they are not too numerous, and speaks of using weak lotions of corrosive sublimate and concentrated solution of alum, also ointments of iodide of mercury and peroxide of iron. Too much care cannot be given to the regulation of the diet, the avoidance of alcoholic and fermented liquors, coffee, pastry, etc., as also all indigestible food.—L. D. B.]

2. MILIUM.

Syn. *Grutum*, *Strophulus*, *Vitiligoidea*, NEUMANN; *Tubercula Sebacea*, *Tubercula Miliaria*, *Follicular Elevations*, *Acne Albida*.—L. D. B.

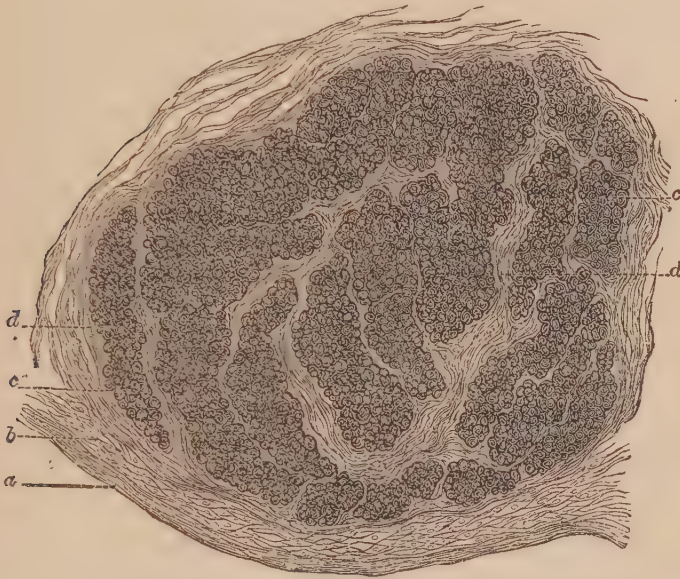
Milium is an accumulation of sebum in the sebiparous glands, forming white papules. When by obliteration of the orifices the masses of sebum collect in the gland, the latter loses its acinous structure, and white spherical bodies are seen, covered only by a thin layer of epidermis. These appear mostly on the face, especially on the eyelids, cheeks, and also on the genitals; frequently on the periphery of scars, particularly in lupus.

They are formed thus: In places where the skin is thin, and has only downy hairs and delicate hair-follicles, a quantity of dried epidermis and sebum collects in a short time within the hair-follicle. The orifice becomes clogged, and, on account of its shortness, the follicle is expanded into a little sphere, which is seen through the hard epidermis.

The nodules contain epidermal cells and crystals of cholesteroline; and, with the addition of sulphuric acid, crystals of sulphate of lime are developed. They are covered externally by the epidermis (*a*, Fig. 8), and next to this is the Malpighian

layer (*b*). The covering proper is either the wall of the hair-follicle (*c*), or that of the sebaceous gland, and this, in the larger dependent tumors, sends numerous connective-tissue septa into the cavity.

FIG. 8.



Section of a dependent milium, taken from the upper eyelid.—*a*, Epidermis; *b*, Rete Malpighii; *c*, Wall of the follicle; *d*, Sebaceous mass.

We find a disease of the skin described by WILLAN as *strophulus albidus*, which evidently must be considered as milium. If one is anxious to retain the name, it must be understood to relate to those collections of sebum which are found on the skin of children, especially on the soles of the feet, and where each papule is surrounded by a slightly-reddened areola.

The treatment consists in puncturing the epidermis, and the evulsion of these spherical bodies by means of a comedo-spoon.

Colloid-milium.—WAGNER has described a case under this name, in which the skin of the forehead was thickened, and traversed by many distinct longitudinal and transverse folds. The folds were white beneath and the rest of the skin was shining, and covered with many elevations of the size of a millet-seed, close to one another. When punctured and pressed, a pale-yellow colloid mass flowed out; the cheeks were less affected,

the nose more so, the orifices of the sudoriparous and sebiparous glands were not visible. It differs from ordinary milium in its colloid contents; in the former the epithelium is fatty, in the latter it undergoes a colloid degeneration. While in the ordinary milium the affection is the result of the closure of the orifices of the glands, in the latter form the obstruction is secondary, dependent on the colloid epithelium.

Vitiligoidea.—Leaving the somewhat confused descriptions of earlier writers, we agree with HEBRA ("Atlas der Hautkrankheiten," 7 Heft. 1869) in describing under this name a cutaneous affection which is found on the eyelids in the form of miliary papules in groups, which produce yellowish-colored circumscribed spots covered with thin epidermis.*

[It is unfortunate that our author has confounded, under the same heading, diseases to the English-speaking world so different as milium, strophulus, and vitiligoidea. Milium, the name given by PLENCK to this disease, will probably be the one which will stand. *Strophulus* is commonly known to be the lichen of infants, or in popular language the *tooth-rash*. *Vitiligoidea*, again, is rather an *epithelial hypertrophy*, and is, moreover, a rare disease. WILSON describes it under the name *xanthelasma*. Some treatment will be required besides puncturing and expressing the contents of these tubercles—the best is washing with juniper-tar soap, and a lotion of the bichloride of mercury in an emulsion of bitter almonds.—L. D. B.]

3. ATHEROMA.

Syn. *Follicular Tumors*, *Balggeschwulst*, NEUMANN; *Encysted Tumors*, Wen.—L. D. B.

After the closure of the orifices of the sebaceous glands, their secretion may continue, forming, as above, comedo and milium, and from a persistence of the same the gland may be further distended, and we have follicular tumors.

These consist of a sac filled with friable matter, whose wall is greatly thickened. The inner layer is usually thin, as the corium is not implicated in its formation. In the contents are found globules and crystals of fat, cholesterine, and epidermis; in the larger tumors the contents are whitish gray and oily, in the smaller ones we find concentric layers of epithelial cells, and crystals of cholesterine (cholesteatoma). In those of some age we find blood-corpuscles, and pigment, and in inflammation of the follicle a greasy fluid is formed, mingled with pus, of a bad odor, which flows out when the tumor is broken.

* But eighteen cases of this disease have been observed.

The tumors are either solitary, or there are several of them scattered throughout the subcutaneous cellular tissue of the head, neck, forehead, eyebrows, face, and eyelids, more rarely on the body. They are found in children as well as adults, singly or in numbers, grow to the size of a pea, hazel-nut, or even much larger, and only give trouble when they become inflamed.

We must, however, distinguish these atheromas from the follicular tumors described by COOPER, on whose summit the orifice of the sebiparous glands may be clearly seen, and which, therefore, do not form a completely-closed sac, as do those under consideration, and which occur mostly on the trunk; in other respects they are similar in structure to the atheroma.

Follicular tumors seldom break spontaneously from inflammation; they are most easily removed by the knife.

4. MOLLUSCUM CONTAGIOSUM.

Syn. *Molluscum Sebaceum*, *Tumores Sebipari*, *Molluscum Sessile*.—L. D. B.

When the sebum collects in the glands in still greater quantity, they become elevated, and form wart-like protuberances, with the orifices of one or more glands on their surface, obstructed with plugs of sebum. Tumors are formed of the size of a pea and over (to the size of a pear, and even that of the fist), attached by a short pedicle, and from them we are able to express a milky fluid, or finely-granular masses which have the appearance of being compressed flatly against each other. Molluscum is found principally on the face, scrotum, and penis. BAZIN describes it under the name *acne varioliformis*.

The disease, as a rule, has a chronic course, and comes either alone on single portions of the skin, or over the whole surface in the form of tumors of smaller or greater size.

I have seen it as an acute disease on the face of a pregnant woman, with tumors of the size of a pea, which disappeared spontaneously during the puerperal state.* Opinions are divided as to the *contagious character* of this disease: while BATEMAN, PATERSON, and more recently BÄRENSPRUNG, and still later, also, VIRCHOW and RINDFLEISCH,† declare it to be

* EBERT (*Berlin. Klin. Wochenschrift*, 1865) observed a case in a child four years of age, whose face was covered with 207 mollusca.

† The section of a molluscum displays, according to VIRCHOW, a dependent

contagious beyond doubt, the experiments of inoculation made by our school have not been successful. Some hold that the whole secretion is the conveyer of the contagion; some, that only the granules; and VIRCHOW considers that there is an endogenous cell-formation, as in the case of canceroids. He mentions a case occurring in the clinic for children at the "Charité," where one child was infected by another.

Therapeutics.—The treatment is local, and consists in expressing the masses of sebum from the smaller tumors and in the ligation of the generally small pedicle of the larger ones, or in their extirpation with the scissors or knife.

[Other authors dwell on the necessity of cauterization either of the cavity after expulsion of the contents, of removing them entirely by caustics, or burning the stump after excision, with nitric acid, nitrate of silver, or caustic potash.—L. D. B.]

Condylomata Subcutanea (Endo-follicular Condyloma).—In this group belong also the condylom. subcutan., described by HATK and ZEISSL, which are found in the sebaceous glands of the genitals and the thighs down to the knees. They appear as pale-white or rose-pink elevations of the skin, flat and quite hard, from the size of a millet-seed to that of a pea. On their summit, the opening of the sebiparous gland is noticed as a small black point. When the tumor is pressed sidewise between the nails, sebum first exudes from the opening, and then a small formation resembling a condyloma, which arises from the base of the follicle, and has no connection with its side-walls. This has a racemose structure; and, according to ZEISSL's investigations (*Archiv für Derm. u. Syphil.*, 1869, I. Heft), is a morbidly-enlarged sebaceous gland in which sebum has accumulated; and, therefore, his assertion, that it should not be called a condyloma, is authorized on anatomical grounds. The disease consists in the excessive hypertrophy of the glandular portion of the follicle. The cause of their origin has not yet been rendered clear; ZEISSL observed them after forced sweat-

glandular arrangement, in which smegma is collected between cylindric cells distributed regularly in a radiate manner. The soft masses consisted of epidermal cells and fat.

As to its *parasitic nature*, these corpuseles which have been described have certainly a resemblance to psorosperm bodies which appear on the intestinal epithelium; still more do they resemble fat. If it could be proved that these bodies have their origin in the cells of the epidermis or rete Malpighii, then this disease could be regarded decidedly as a disorder of secretion. This, however, it is not possible to prove; but, according to VIRCHOW, quite similar forms are found in other epidermoidal formations, where there can be scarcely any doubt as to their endogenous origin.

ing in lying-in-women and children, in acute exanthemata, and once after a forced sweat-cure of Priessnitz. Subcutaneous condylomata sometimes disappear spontaneously from inflammation caused by friction with the clothing, or after expression of the smegma; otherwise, they are best removed with the curved scissors.

Ossifications and Calcifications (Cutaneous Stones).—We finally mention ossifications and calcifications of the skin, the so-called skin-stones. Free, movable masses, of the hardness of stone, are found under the skin, and these are most commonly cystic or fatty tumors, which have undergone a calcareous metamorphosis, and whose cyst or stroma is ossified. The earthy substances are principally phosphate or carbonate of lime, united with fat and extractive matter. The forms of the concretions are various, their size being from that of a grain of sand to the size of a nut.

C.—DIMINUTION OF THE SEBACEOUS SECRETION.

XEROSIS.

In consequence of a too scanty secretion of sebum, the skin becomes dry, harsh, inflexible, and cracked. We may have either roughness alone or scaliness of the skin, pityriasis, or, from the too frequent contact with soap or lye, the normal fat is removed from the skin, and it becomes rough and cracks, as seen in washer-women and domestics. Such patients regain their normal skin after frictions with oil, and suspension of their occupation for a season.

The disease may also appear in the course of elephantiasis Græcorum, sclerema adutorum, prurigo, ichthyosis, lichen exudativus ruber, and also as a senile alteration of the skin. WILSON has described this disease under the name *xeroderma*.

ANOMALIES OF THE PERSPIRATORY SECRETION.

The sweat has never yet been chemically investigated in its pure state, as it always has epidermal cells and sebum mixed with it. The chemical analysis of sweat obtained from the whole surface shows—

| | | | |
|----------------------------|-----------|---------------------------|---------|
| Chloride of sodium..... | 2.230 | Lactate of potash..... | 0.317 |
| Chloride of potassium..... | 0.244 | Perspirate of potash..... | 1.562 |
| Sulphate of potash..... | 0.011 | Urea..... | 0.044 |
| Phosphate of soda..... | } traces. | Oily matter..... | 0.013 |
| Earthy phosphates..... | | Water | 995.573 |
| Albuminates of potash.... | | | |

The chemical composition varies in different localities, especially in the proportion of potash.

The secretion of the perspiration is increased when the temperature of the skin is elevated, whether it be by muscular exertion, from the effect of an elevated temperature, from hyperæsthesia after section of the vaso-motor nerves, from continuance in air saturated with moisture, after the use of warm drinks, etc. It is only after morbid changes that these agencies fail to produce sweating; the activity of the perspiration decreases with its duration.

According to A. W. FOOT, partial hyperhydrosis is dependent upon relaxation of the muscles of the blood-vessels, and the consequent enlargement of the arteries of the subcutaneous cellular tissue. A parietic condition of the vascular nerves occurs oftener in a reflex than in a direct manner. Thus, BROWN-SÉQUARD and BARTHEZ have produced hyperhydrosis of the cheeks by the use of irritating applications to the mucous membrane of the tongue (Schmidt's "Jahrbücher," 1869).

It was formerly thought that those parts which had more or larger glands (forehead, flat of the hand, sole of the foot, and axillæ) secreted a larger proportion of sweat; but C. REINHARDT (*Zeitschrift für Biologie*, 1869) has proved that the cheeks perspire the most; the palm of the hand, so rich in sweat-glands, somewhat less; and the forearm the least.

In one and a half hour, 2,560 grammes of sweat may be secreted.

The epithelial cells of the glands contribute to the production of the sweat, especially of the fatty and volatile acids, which give it the odor. The fluid is supplied from the numerous capillaries of the glands. Fresh perspiration has an acid reaction; very profuse sweatings are alkaline or neutral, as also that from the axillæ and soles of the feet, and that of uræmic patients, which depends, without doubt, upon its rapid decomposition. A glass rod moistened with hydrochloric acid, held near a person perspiring freely, is enveloped with a cloud of ammonia.

QUANTITATIVE ALTERATIONS OF THE SWEAT.

The perspiration may be either diminished or increased—*anhydrosis*, *hyperhydrosis*.

A *diminished secretion of sweat* occurs as a symptom of internal diseases (typhus fever, diabetes mellitus, hemiplegia, carcinoma), or, as a consequence of certain cutaneous lesions (prurigo, psoriasis, ichthyosis, etc.); there are also individuals who, although their skin is provided with sweat-glands, yet do not perspire even under a high grade of temperature.

There are also cases known of simple local cessation of the perspiration, so that, for example, the skin is dry on a paralyzed extremity, and moist on the healthy parts; the normal secretion returning as soon as the cause was removed.

The profuse secretion of sweat is either *general* or *local*; general *hyperhydrosis* comes in various forms; the skin may be either hot and congested, or cold, pale, and collapsed. Thus the sweat of pneumonia quickly evaporates, while that of tuberculosis clings for a long time to the skin, becomes mingled with the secretion of the sebaceous glands and epidermal cells, and produces on the skin the change which we have already described as *pityriasis tabescentium*. The sweat which quickly evaporates is occasioned by increased pressure in the blood-vessels and augmented action of the heart, while the sweat of tuberculosis arises from the diminished resistance of the organic fibres. We should also mention the sweatings which attend congestion of the right side of the heart and veins of the body, as in cyanosis, and diseases of the heart and lungs.

The hyperhydroses, thus far mentioned, belong as such to the province of dermatology, only as far as some changes are produced by them on the skin, which we designate *sudamina* (*miliaria*) and *intertrigo*.

Far more frequently is the profuse secretion of sweat a partial one, confined to a small portion of the skin, *hyperhydrosis localis*, and its seat is generally the soles of the feet, palms of hands, axillæ, genito-crural folds, and fundament. *Hyperhydrosis of the feet-soles* is a most annoying affection, both for the patient and also for those around him; for, not to mention the very unpleasant sensation of moisture, the long-continued duration of the disease gives rise to considerable pain. The epidermis becomes macerated by the sweat, is detached, and every step in walking gives pain; fissures are formed about the toes, which increase the suffering. The offensive smell is most

obnoxious to the patient as well as to his neighbors. This is produced by the rapid decomposition of the sweat, and by the coverings of the feet becoming speedily impregnated with it, and thus giving off the fetid smell. That this is really so is easily demonstrated (as HEBRA has already shown), by washing such feet, and then collecting the sweat secreted; we find that, in its fresh condition, it never has any unpleasant odor. The cause, therefore, of the bad effluvium is the long continuance of the decomposing sweat on the feet, and its absorption by their coverings. Increased secretion of sweat on the palms of the hands has no further consequences in mild cases; when it lasts a long time, the skin of the hand is light-colored, macerated, and painful. Sweatings of the axillæ, genito-crural folds, and buttocks, occur mostly in corpulent persons, and are very frequently the cause of erythema (intertrigo), which may sometimes develop into the most obstinate eczema.

QUALITATIVE ALTERATIONS OF THE SWEAT.

As yet these have been but little investigated, and we recognize them only by the odor and color of the secretion. As smell is a subjective sensation, it can be imagined that the accounts respecting it would be various; it is said to depend mostly on butyric, formic, and metacetic acids. Cases are mentioned of the sweat of peritonitis smelling like musk, and of odors of sulphuretted hydrogen; the sweat of syphilitics is said to have a sweetish smell, and that of rheumatics a sour; of those affected with scurvy, a putrid; of scrofulous persons, like that of beer; of malarial-fever patients, like that of black bread (Schwarzbrod) (?). SCHÖNLEIN is said to have made the diagnosis of measles and scarlet fever by means of his organ of smell. The statements with reference to blue,* green, and

* *A Case of Cyanhydrosis (Blue Sweat).*—Dr. KOLLMAN (in the *Med.-Physic. Gesellschaft zu Würzburg*) communicated a case of cyanhydrosis, which deserves mention, inasmuch as the sweat was chemically investigated by Prof. SCHERER.

The case was that of a man forty years of age, with a yellowish-colored face, in whom the disease, beginning insidiously, developed itself through a number of years; the internal organs were healthy, except that the patient suffered from attacks of dizziness, palpitation of the heart, and great mental disquietude, and was, moreover, despondent, and inclined to melancholy. There also appeared quite severe congestion of the blood-vessels of the face, conjunctiva, and also of the hands,

black sweat, are, according to HEBRA, mythical. *The yellow color of icteric patients* has no connection whatever with the perspiration, but depends on the presence of the coloring matter of bile in the epidermal cells.

The sweating of blood, whose occurrence is asserted by reliable authors, appears chiefly in amenorrhœic females, and may depend on the ready laceration of the walls of the capillaries of the sweat-glands from great excitement; so that in

After these attacks the feeling of uncommon weakness came over him; and he was greatly tormented by profuse night-sweats. From time to time there occurred hæmorrhoidal losses of blood.

On the scrotum, around it, and also on the inner surface of the thighs (not at all on other places), there appeared a secretion of sweat, which, at first uncolored, afterward assumed a light-blue tinge, and gradually became of a darker hue, until it reached a deep indigo-blue color. During the winter months the patient took two or three baths a week, besides frequent local cleansing; the blue perspiration nevertheless still appeared, and the portions of under-clothing lying upon the above-mentioned parts were also dyed of an indigo blue.

A chemical analysis made by SCHERER confirmed the blue color of the sweat, which depended on the protophosphate of iron.

Dried blue particles, which were removed from the scrotum with the forceps, were submitted to microscopic examination. The tissue-elements found therein (epidermis, hairs, etc.) were uncolored, but the fibres from the clothing (cotton) were of various shades, brownish, violet, and blue; dark-blue particles were also found. The above-mentioned coloring matter was soluble neither in water nor glycerine. The cotton fibres did not lose their color, in potash or ammonia, but did so with sulphuric and nitric acids. No blue coloring matter could be demonstrated in any other secretion.

Although it cannot be denied that the blue coloration was most intense when he was under the preparations of iron, yet it must be expressly stated that, although for ten or eleven months no use was made of iron internally or externally, the blue color of the sweat continued for a long time, although not so intensely. Later, no blue coloration was perceived. This form of chromhydrosis KOLLMAN designates as cyanhydrosis.

We find several cases of the appearance of blue sweat on record (*Württemberg Med. Correspondenzblatt*) since the year 1835. Dr. BLEYFUSS, of Röttingen, noticed on himself for a long time that the perspiration of his feet contained blue coloring matter. Dr. MICHEL observed the same of the sweat of his right axilla. Both were conclusively convinced that this pigment did not come from articles of clothing. BIZZO found indigo in blue sweat, and FORDAS pyrocyanin.

Other cases have been published by HEYFELDER, BERGMANN, and IGNAZ SURDON in Sigmaringen, and by FERRAND. The first mentioned reports that a hypochondriacal, poorly-nourished man, forty-eight years of age, and an hysterical woman of fifty years, both of whom labor under an affection of the liver, have blue perspiration, especially on the right side, from the axilla to the foot, which certainly does not come from the clothing.

these cases it is not an actual sweating of blood, but an extravasation of blood into the perspiratory glands.

The excretion of urea by the skin in cholera, eclampsia parturientium, and morbus Brightii, has been proved. Whether sugar appears in the sweat as a morbid product of secretion, is not yet proved. LEUBE has very recently (*Centralblatt für Med. Wissensch.*, 39, 1869) demonstrated the excretion of albumen in the sweat.

Experiments on the *excretion of medicinal substances* in the sweat are yet few in number. Quinine and salicine do not pass over at all into the sweat, and iodine only after its long-continued use; on the other hand, tartaric, succinic, benzoic, and cinnamonic acids, and arsenic, have been certainly proved to do so.

Therapeutics.—As to the treatment of local hyperhydrosis, we can cure the disease in most cases. In hyperhydrosis of the feet, the coverings must be removed to obviate the noxious odor. After the feet have been washed they are covered with pieces of linen, spread to the thickness of the back of a knife with a salve consisting of: emplast. diachyl. simplic., liquefacti, olei lini, $\bar{a}\bar{a}$ partes equales (ИЕВРА), or emplast. diachyl. simplic., liquefacti, emplast. lithargyr., fuse cum olei lini. This is renewed three times in nine days, that is, every third day; in most cases one such cycle being sufficient to cure the disease. We also recommend pediluvia with astringent remedies, as decoct. quereus, as also washing with a soap containing iodine and sulphur. It is well for such patients to sprinkle their stockings with cream of tartar, and, for a while after the cure, to place lint with powdered starch or cream of tartar between the toes. Cauterizations with nitrate of silver, as recommended by some, are superfluous.* The same means are useful in hyperhydrosis of the axillæ and hands.

* A. GAFFARD recommends a mixture of one grain of red oxide of lead dissolved in twenty grammes of lead-water, to be dropped between the toes, as the principal seat of sweating of the feet. This treatment repeated every eight days, and in summer every day, is said to suffice to cure the disease and to prevent its return (?).

CLASS II.

INFLAMMATION.

The skin and mucous membranes afford the best ground upon which to study clinically the phenomena of inflammation. According to the present view, the inflammatory process consists essentially in a vascular disturbance, hyperæmia and stasis in the capillaries, and a consequent implication of the tissue and its elements. The hyperæmia manifests itself externally as redness; but hyperæmia, as such, is transient, and cannot be considered a disease, and has no further results, except when it continues, increases to stasis, and is accompanied with exudation, in which case it produces inflammation. The exudation which takes place from the vessels into the surrounding connective tissue, in consequence of intra-vascular pressure, may be serous, poured out in a very short time, and reabsorbed quite as quickly. An example of this is found in urticaria and many forms of erythema.

This serous exudation is, therefore, to be looked upon as the mildest grade of local inflammation, in which there is only the sensation of itching or burning (or even these may be absent), without there being any further affection of the tissue or general symptoms (fever).

As soon as the tissue itself is involved in the inflammation, it is immediately excited to greater activity by the increased supply of nutritive material, and a multiplication of the cell-elements occurs, most probably from division of the normal tissue-elements, and we have the type of inflammatory infiltration.

A still higher grade of inflammation is that which is accom-

panied with the formation of pus. The exudation itself is not purulent, but new cell-elements are formed, the pus-cells, which in part proceed from the cavity of the vessels, passing through their walls, as WALLER and COHNHEIM have proved, and are in part formed by division and endogenous production from the tissue-elements themselves.

The primary cell-formation is at first indifferent, that is, we have young cells which cannot be distinguished from the embryonic or granulation cells. If the inflammatory process increases, suppuration ensues, of which we will speak presently; if, on the contrary, it diminishes, then tissue is formed from the indifferent cells, mostly connective tissue. Chronic inflammation, then, consists of an infiltration of the normal structures with such connective tissue, and, as we may readily conceive, the distinction between chronic inflammation on the one hand, and hypertrophy, or formation of tumors on the other, is by no means marked. This fact has been proved beyond doubt, very lately, by STRICKER, W. NORRIS, and L. OSER.*

The process of suppuration is always accompanied with consumption or destruction of tissue-elements, and, if the pus is formed alone in the superficial portion of the papillary layer, the destruction of epithelium is small, and the loss of substance can be completely replaced without the formation of a cicatrix. As soon as the suppurative process involves the whole cutis, and large patches of epidermis are lost, restitution takes place by means of a transition-tissue, the granulation-tissue, forming a scar. All vesicular and bullous eruptions, as herpes iris, eczema, pemphigus, etc., are examples of superficial suppurations which heal without cicatrization. Those which extend deeper, and are repaired by the production of scars, are represented by herpes zoster and the pustular eruptions.

A third form of inflammation is the diphtheritic. In this, neither the exudation nor the suppuration is of itself specific but probably some extraneous poison (vegetable growth?) entering in causes a rapid destruction of the affected parts, and also of those in the immediate vicinity; that is, the process which is designated clinically as gangrenous action or diphtheritic ulceration.

* Studien aus dem Inst. für Pathol. in Wien, 1870.

In grouping inflammatory diseases of the skin, we have studied them chiefly from an etiological point of view, because this assists us most in clinical study. We distinguish, therefore, inflammations which arise from contagion, those which come spontaneously, and finally, those of traumatic origin.

A.—CONTAGIOUS INFLAMMATIONS.

a. RUNNING AN ACUTE TYPICAL COURSE.

1. VARIOLA.

Syn. *Small-pox*, *Febris Variolosa*, *Variole*, *Petite Variole*, *Blattern*, *Pocken*.—L. D. B.

History and Pathology.—The most varied opinions prevail as to the time of the first appearance of small-pox. While some writers assert that it raged in China 1,500 years before the Christian era (as boils sent from heaven), and that about this time a certain goddess was worshipped in India as protectress from it, others declare that, according to the codex of the Chinese, it began in the seventeenth century. We can recognize small-pox in the terms used by GALEN and HIPPOCRATES, *ἐξανθεματα μελانا*, *ἀνθρακες πολλοι*, *ἐκθυματα μεγάλα*; and even the pest which raged in Athens during the Peloponnesian War, and which was described by THUCYDIDES, is said to have been an epidemic of small-pox. The pestilence is likewise said to have broken out in the army of Alexander the Great, on his return-march from India; and, according to DIONYSIUS of Halicarnassus, small-pox raged in Rome 301 years after its founding. But all these data are uncertain, because of the inexact description of the disease.

RHAZES, an Arabian physician who practised in Bagdad in the tenth century, is the first who speaks fully of variola, and mentions in this connection the name of AHRON, a physician in Alexandria, who is said to have lived about the year 622, at the time therefore when Mohammed first made his appearance as conqueror and prophet.

The success of the Saracen arms in Spain and Sicily, in the eighth century, certainly assisted greatly in the spread of small-pox throughout the various lands of Europe. We find in the British Museum a manuscript, attributed to the tenth

century, which contains a prayer for protection against this disease, Nikasius being the saint appealed to for protection in England, where the small-pox prevailed after the year 907.

After the Crusades, or rather, by their means, small-pox was known as a ravaging epidemic, and pest-houses were everywhere erected to check the disease, and to afford assistance to the sufferers.

Shortly after the discovery of America, the Europeans carried the small-pox to the inhabitants of the newly-found lands. According to the account of Spanish historians, in Mexico alone, three and a half millions fell victims to the disease. Among them was the brother and follower of the brave but unfortunate Montezuma. In Hayti, the small-pox carried off all the inhabitants; in Brazil, whole tribes were completely destroyed.

The lands unvisited by the seafaring Spaniards and Portuguese were soon found by the Dutch and Danes, and infested with the small-pox. In Iceland alone, among 50,000 inhabitants, 20,000 succumbed to the plague; it found its victims also among the dwellers in the Faroe Islands, Capeland, and Greenland. With what fearfulness it raged is shown by the fact that in Greenland, of 2,000 variola patients, only seven escaped death. At the same time, in 1767, the epidemic raged also in Siberia and Kamtchatka, and the latter was almost entirely depopulated.

There are but few countries which have remained exempt from the small-pox, and at various times new epidemics have ever broken out of a destructive character in all portions of the world, so that in Europe alone over half a million of human beings fall victims to it yearly.

Description.—Small-pox, or variola, is an acute, contagious * disease of febrile character, during the course of which an eruption appears on the skin, first as papules, which soon develop into vesicles, pustules, and crusts, and which therefore run a definite course.

* The term *contagion* has more recently obtained a firmer footing, inasmuch as a fungus is thereby designated. The lower organisms are said to appear in the blood in variola, measles, scarlatina, typhus fever, and syphilis (HALLIER); but the subject is still undecided.

Varieties of Small-pox.—We assume three forms of variola, each according to the intensity of the process :

1. *Variola vera*. Duration thirty-one days.
2. *Variola modificata*, or varioloid. Duration twenty-one days.
3. *Varicella*. Duration fourteen days.

The morbid process is the same in all the three forms ; the eruptions, as well in their anatomical structure as also in their appearance, are entirely identical, and the intensity of the disease alone varies ; in variola vera there are more efflorescences on the skin than in varioloid, and more in the latter than in varicella.* Therefore *the duration of the morbid process*, which stands in exact relation to the number of efflorescences and the intensity of the phenomena, serves as *the peculiar characteristic* of the different forms of variola. The depressions in the pustules, which were thought to belong to variola vera alone, are found in all the forms of variola, or are entirely absent, especially when the *vari* are not large. The eruption occurs not alone on the skin, but also on the mucous membrane of the mouth and pharynx. Further, these depressions are not solely characteristic of variola, for we see them as well in the pustules produced by frictions with croton-oil or *ung. Autenriethi* ; they are also seen in herpes zoster, and in most affections of the hair-follicle.

Anatomy.—RAYER, FUCHS, BATEMAN, ALIBERT, and more especially SIMON, supposed a reticulated or cellular formation of the pustules ; BÄRENSPRUNG and HEBRA have expressed themselves as opposed to this idea.

EBSTEIN, in Breslau, found an enveloping capsule, consisting of nucleated cells, between the mucous and horny layers. The superficial pustules are developed in this layer, but sometimes they extend still farther downward ; they have no proper mesh-structure, but only one that is formed of diagonal bands of compressed epithelial cells, between which the pus-cells are

* THOMAS doubts the identity of varicella with the other two, on the following grounds : The eruption is formed and disappears much more rapidly in varicella than in the other two ; epidemics of varicella are much more frequent than those of variola ; vaccination affords no protection against it ; children are attacked principally, there are no prodromal symptoms, and the eruption appears often even at the end of the first day. It is said that the contents of the varicella pustules cannot be inoculated ; also, that the incubation has no constant duration, as in small-pox.

packed. The pustules which extend deepest into the skin are developed in the deeper layers of the rete Malpighii. The young mucous layer, which lies above the papillæ, becomes infiltrated with cells; from the active cell-proliferation small cavities are quickly formed over each papilla of the cutis which are filled with pus-cells, whose base is the papilla, the covering of which is the superficial layer of the epidermis, and whose side walls are formed by the hard cell-strata of the mucous layer not yet destroyed. Each pustule, therefore, is made up of as many small cavities as there are papillæ beneath it. In the pustular stage the above-mentioned septa perish, and only fragments of them are left.

The studies on small-pox by AUSPITZ and BASCH, whose results I wholly confirm and here delineate, gave the following:

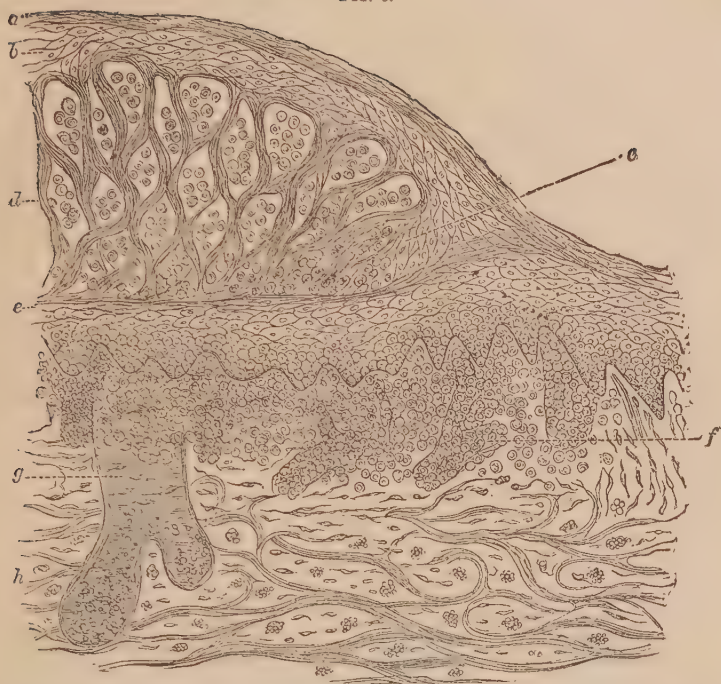
Papules.—On the fifth day of the disease, that is, on the second of the eruption, the epidermis is elevated, and that apparently by the increase in thickness of the Malpighian layer whose individual cells are larger than normal. The nuclei are enlarged, the vessels of the corium are distended both in the papillary layer and for a distance beneath it; on their walls are small, roundish cells. Similar cells in the stroma of the papilla; papillæ and glands unaltered.

Vesicles.—Next to the epidermis we find a layer of rather long cells, which pass directly over into the roundish or flattened and evidently swollen cells of the rete Malpighii. Beneath this is seen a mesh-work, of about the breadth of the vesicle, of but little depth, and which is nearer the epidermis than the corium. This mesh-work consists of strips of apparently filamentous structure, which to the eye are formed of the spindle-shaped cells of the hypertrophied Malpighian layer, pressed together and flattened.

These meshes are filled with pus-cells; some of the cavities are found to have ten and more corpuscles in their interior. Beneath this net-work we find roundish cells, which resemble partly those of the net-work, partly the swollen cells of the rete Malpighii; they dip down between the papillæ. The papillæ beneath the vesicle are broader and shorter than common, and those in the immediate neighborhood are increased in length; the vessels are surrounded with cells.

Pustules.—The mesh-work extends more and more toward the corium, and spreads at the periphery; in the interstices are round cells. The vessels of the papillæ are surrounded by

FIG. 9.



Vertical section through half a pustule enclosed in its capsule (enlarged 250 diam.), after AUSPITZ.—
a, Old epidermis; *b*, Rete Malpighii, outer cuticle of the mesh-work; *c*, Swollen cells on the sides of the structure; *d*, Net-work with the enclosed pus-cells; *e*, Newly-formed epidermis; *f*, Vessels, surrounded by cells; *g*, Portion of a sebaceous gland; *h*, Corium.

compact cells, which on the periphery form connective-tissue corpuscles. The pustular contents are enclosed between two layers of epidermal cells without nuclei, as by a capsule. Besides the pus-cells, granular elements are also found, with fine molecular contents insoluble in acetic acid.

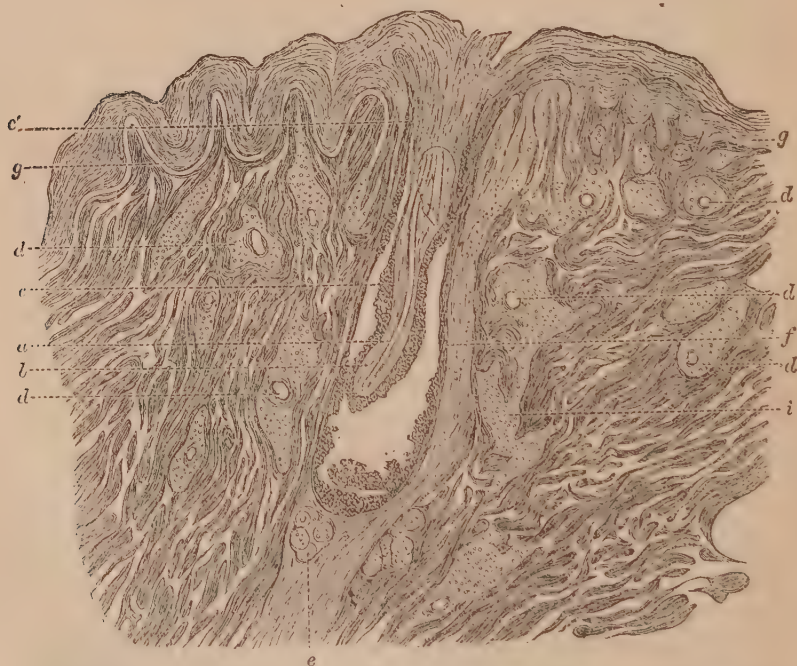
The inflammatory process ends, as a rule, with the gradual separation of the pustular contents by the formation of a new epidermis beneath. The effete matter dries to a crust, beneath which the skin either returns to its normal state, or an ulcer results.

The depression (Delle) in the vesicle is simply a retraction of the epidermis, *primary umbilication*; with the decrustation, a secondary depression appears. While the swelling of the cells increases toward the exterior, the pus formed slowly at

first is enclosed by the swollen cells accumulated at the periphery as by a capsule; this gradually increases in size without the formation of pus in the centre, keeping pace in every case with this enlargement. The cells of the rete Malpighii on the side reabsorb partially, the fluid slowly collecting in the centre, the papillary layer there sinks in, and therefore the epidermis, which is supported on the sides by the densely-crowded masses of cells, must sink in the centre where this support fails.

PURPURA VARIOLOSA (Fig. 10).—After very severe febrile excitement and great disquietude of the patient, an eruption of vesicles appears on the skin, which is then of a scarlet-red color. The vesicles are generally not raised above the surface, and are caused by the effusion of a hæmorrhagic fluid into the

FIG. 10.



Section in variola hemorrhagica (after ERISMANN).—*a*, Hair-shaft surrounded by, *b*, a remnant of the inner root-sheath; *c*, Exudation mass in place of the disorganized outer root-sheath. At *c'* the exudation mass has crowded into the inner root-sheaths, where these pass over into the epidermis, so that it is there separated into two layers; *d*, Vessels of the corium surrounded by exudation-cells; *e*, Sudoriparous glands; *f*, Sheaths of the hair-follicle; *g*, Stratum Malpighii; *i*, exudation-cells around the hair-follicle.

hair-follicle ; at the same time hæmorrhages take place also in other tissues, in the sclerotic, in the lungs and from the intestinal mucous membrane, kidneys, and bladder, occasioning bloody discharges and urine. The patients are very restless, toss around in bed, and suffer from dyspnœa, especially when there is œdema of the glottis. The fatal termination is induced by suffocation. Rupture of the muscular tissue and congestion of the heart may occur, and death follows in every case in two or three days.

ERISMANN (*Sitzungsberichte der kaiserl. Akademie*, 1868) has lately made some anatomical studies in purpura variolosa. The characteristic of variola hæmorrhagica in distinction from variola vera lies in the fact that in it the corium around the hair-follicle is first attacked, and that, too, deep down to the *hair-papilla*. The vessels there are surrounded by numerous exudation-cells (Fig. 10, *d*). The sheaths of the hair-follicle themselves are quickly infiltrated (*c*). In a somewhat more advanced stage, we see how the exudation-cells penetrate into the root-sheaths, how the latter (*f*) are separated from the hair-bulb, and are more or less completely destroyed. The same fate befalls the sebaceous glands ; and so in those eruptions which have lasted for some time we find the hair-shaft isolated or covered with a thin layer of the inner root-sheath, in the centre of a small abscess. The rete Malpighii had participated but moderately in the specimens observed ; exudation-cells, indeed, were found in it, but the epidermoidal cells themselves had suffered no alteration in form, and there was certainly no appearance of the formation of vesicles.

Course.—There are four stadia in small-pox: a stadium prodromatorum, eruptionis, floritionis, and decrustationis. The *stadium prodromatorum* is characterized by fever, pain in the joints and back, and in the scrobiculus cordis. The intensity of these phenomena does not indicate the severity of the disease, for very severe febrile phenomena may precede a mild attack. The skin is sometimes reddened with a roseolous or erythematous blush. Exacerbations occur in the evening, which are greater every day. This stage lasts from twenty-four hours to three days, seldom longer, and in the latter case gives an unfavorable prognosis (in drunkards, and in pregnant and puerperal women).

The fever and accompanying phenomena continue up to and into the *stadium eruptionis*. When the eruption is abundant, it is found first on the face (*variola vera*); when but few pustules exist, they are found generally on the body first (*varicella*). This stage may be mistaken for morbilli papulosi, sometimes also for erythema papulatum; and the diagnosis must be held in suspense for twenty-four hours. Variola may occur at the time of menstruation, or the menses may make their appearance in an irregular manner during this stadium. This stage is often of shorter duration in varicella.

Stadium Floritionis.—In all the varieties of small-pox, the formation of vesicles precedes that of pustules; but the intervals of time vary: in *variola vera* in six days, in *variola modificata* in four, and in *varicella* in two days. This period in *variola vera* may be extended to ten days, pustules being formed latest on the extremities, and often colored dark with blood. Calculating from the commencement of the attack, this occurs in *variola vera* on the tenth day, in *modificata* on the sixth, and in *varicella* on the fourth. During this stage the fever disappears, and that completely in *variola modificata* and *varicella*, but in *variola vera* there are supplemental exacerbations.

Stadium Decrustationis.—The drying proceeds in the same order as the development of the vari: in *varicella* from two to six days, *variola modificata* seven to fourteen, *variola vera* fourteen days to six weeks. This time does not include the falling off of the scabs, which may take much longer. No explanation as to the more rapid or slower desiccation is found in any anatomical differences; chemical alterations may possibly reveal the cause. In general, we can say that the more favorable the case, the quicker does the decrustation take place. So long as the desiccation is not complete, the danger to the patient is not past.

Appearances on the Mucous Membranes.—That the mucous membranes are involved in the variola process and present eruptions similar to those on the cutaneous envelope, is nothing new; but, as their anatomical structure and the differences of their course from those on the external skin are nowhere clearly set forth, a few observations on the subject may not be wholly without interest. The differences relate mostly to their course, and

find their explanation in the structure of the mucous membrane and its glands, in the quantity and temperature of its secretion, and in the limited access of atmospheric air, each of these peculiarities tending to effect a rapid development, a speedy collapse, and, finally, a complete detachment of the eruption. While, therefore, on the beginning of *the fourth day* the swollen follicles on *the outer integument* are in the form of papules, we notice already *on the mucous membrane* white, aphthous-like efflorescences of the size of the head of a pin, on a reddened and swollen base: their covering is yet quite tense, and they are removed only by the application of force. If such a papule be separated, for example, from the inner surface of the lip, it is seen by the naked eye to be macerated and easily torn into fibres. Under the microscope, we find it to consist partly of normal, partly of swollen (engorged) epithelial cells; there are also free nuclei with nucleoli, and pus-cells in moderate quantity.

A later examination, say on the fifth or sixth day, shows the number of the normal epithelial cells diminished, the pus-corpuseles increased; the epithelial cells still present are altered in a striking manner, and are found to have from two to four nuclei, which again enclose nucleoli.

The efflorescences on the mucous membranes increase in number and size, especially laterally, during the first few days, and, when the formation of vesicles is hardly complete upon the outer integument, those on the mucous membranes are found to be in the stage of desquamation. As the epithelium of the mucous membrane and its glands is more delicate than that of the outer skin, the elevated epithelial covering soon ruptures from the accumulated exudation; this taking place first in the centre, the fluid contents are evacuated, and we find in its place a depression, through which the reddened mucous membrane is seen. On the mucous membrane of the lip, even the orifices of the mucous glands can be clearly seen with a loupe.

This rupture occurs within the first two days of the existence of the eruption; the epithelial covering adheres, however, for some time on the periphery, and the time of its separation varies from six to sixteen days. It occurs earliest in

varicella, and at the beginning of the eighth or ninth day there is generally either no trace whatever of the small-pox to be seen, or its location is indicated solely by a dark-red spot. In *variola modificata* the whole process is accomplished in the first sixteen days, while in *variola vera* complete repair does not follow often before the twenty-fourth day, or even later. The latter happens especially in those cases of *variola vera* in which the process was more intense, the exudation consequently taking place into the deeper layers of the mucous membrane, and the sub-mucous cellular tissue. Deeper losses of substance frequently follow on the mucous membrane, which are replaced by suppuration and cicatricial tissue. There is yet another appearance which should be mentioned, although it seldom occurs, and that is, an *incrustation on the mucous membrane*. It is not to be understood by this, however, that every pustule forms a corresponding crust, just as on the outer skin; but the hard and soft palate is sometimes covered with a symmetrical crust, often several lines in thickness, after the removal of which the mucous membrane lies exposed as a raw surface, covered with a whitish exudation. This formation of crusts takes place in the severer cases of small-pox, and especially where the quantity of the eruption on the nasal mucous membrane is so considerable that the patient can only breathe with open mouth, so that the eruption here is exposed to the action of the atmospheric air, and dries with the secretion of the mucous membrane.

These observations were made chiefly from the eruption as it occurs on the lips and mucous membrane of the mouth, although the small-pox attacks other portions of the membrane, which naturally are not so accessible to inspection; thus we find them on the mucous membrane of the nose, pharynx, and upper third of the œsophagus, sometimes in the stomach, on the epiglottis, in the larynx and trachea, on the bronchi to their third division, in the urethra and rectum, on the labia, on the conjunctiva palpebrarum and conjunctiva bulbi, and in the external auditory canal. I have not been able to discover any eruption in the vagina and vaginal portion of the uterus, not even when there was prolapsus uteri or vaginae, although some authors have asserted that they come in these parts.

Moreover, in connection with the variola process there occur catarrhal ulcers in the intestinal canal, which occasion profuse diarrhoea; thus, ROBERT describes an epidemic in Marseilles, where the localization of the small-pox was chiefly in the intestinal canal, and DRESSLER an epidemic among sheep, where the chief manifestations took place in the liver (?).

Small-pox frequently attacks the orifices of the Meibomian glands; their contents are purulent, and cause the ciliæ to adhere together. We never find *pustules* upon the conjunctiva, the inner surface of the lids, or the bulb, but only *vesicles*, and these very rarely. Suppuration of the cornea with perforation of the same is very rare, and always only a metastatic phenomenon.

Among the small-pox patients which have come under my observation, ten were so unfortunate as to lose each an eye; in one female who had been revaccinated and pretended to have been so a second time, a metastasis to the lungs occurred, which proved fatal. In the other patients, an ulcer on the upper border of the cornea occurred, sometimes within a few hours after marked injection of the conjunctiva bulbi, and of the vessels on the border of the cornea, had been noticed. The resistance of the affected bulb was increased, the aqueous humor became cloudy, and within twenty-four hours the whole upper half of the cornea to Descemet's membrane was destroyed, in spite of puncture and the application of atropine. In a few days a staphyloma anticum was formed, together with prolapsus iris.

The pustules of small-pox on the tongue are generally large, the largest being found on its base. It seldom happens that the whole tongue is involved, but when this does occur, it increases greatly in size, presses out between the teeth, and protrudes from the mouth, and may cause suffocation. The laryngoscope discloses the eruption in the posterior nares and pharynx, on the epiglottis, in the larynx and trachea. As soon as the stadium floritionis has begun, we can in many cases make a successful examination with no especial difficulty. Deep ulcerations may occur on these places; we will mention only one case having a fatal termination during the period of florition, in which the mucous membrane of the pharynx and

trachea was deprived of its epithelium and covered with a diphtheritic membrane of half a line in thickness, beneath which the reddish-brown mucous membrane, swollen to the thickness of a line, appeared eroded by small-pox ulcerations. These ulcerations extended in the bronchi to their third division, and the mucous membrane of the finer bronchi was dark red and swollen.

Small-pox in the *external auditory canal* is also worthy of notice. Here, however, the vari come in moderate quantity, and that only in the cartilaginous part, while they have never been seen on the bony portion or drum. On the latter there is but a moderate secretion, after the removal of which the covering seems loosened, and the drum opaque. Chronic otorrhœa, and even difficulty of hearing, may result from small-pox in this locality.

The quantity of the eruption on the mucous membranes, as a rule, is proportionate to that on the outer integument, but there are cases of varicella and varioloid where the whole mucous membrane of the soft and hard palate is completely covered, while in variola vera there is sometimes but a slight eruption here; on the other hand, there are some cases of varicella, in which not a single efflorescence can be found on the mucous membrane of the mouth.

The above-mentioned circumstance, that often on the fourth day we find the vesicles on the mucous membrane of the mouth fully developed, while on the outer skin only papules are to be seen, is of service, in some cases, as a diagnostic mark between *variola* and *morbilli papulosi*; as also when a doubt exists as to whether the disease is *acne disseminata* or *variola*.

The symptoms caused by small-pox on the digestive and respiratory tracts are: great pain in swallowing (which in infants sometimes becomes so severe that they refuse all nourishment and die of starvation), flow of saliva, hoarseness, and the symptoms of bronchitis when the process extends to the bronchi. In this case, however, it is not so much the small-pox itself as the catarrhal inflammation of the mucous membranes which accompanies the acute exanthemata in general, which gives rise to the bronchitis.

Anomalies of Course.—The pustules of small-pox are some-

times in such great numbers that they become confluent. Often on the face and arms we find no single efflorescences remaining, but only a great space undermined with pus. In other cases the efflorescences are only the size of a millet-seed, *variola miliformis*, or they develop into great blebs, *variola pemphigoides*, which are quite different from those which form during the stage of decrustation on parts which have remained free from crusts, and which are filled with a yellowish serum. Sometimes, after the crusts have fallen off, small warty elevations are developed, which have their origin in the retention of sebum in a follicle, and which disappear with the employment of the remedies used in seborrhœa; this variety is called *variola verrucosa*. Often, in the stage of decrustation, a wall is formed around each pustule, filled with pus, *rupia variolosa*; in connection with this we may have chills, erysipelas, and pyæmia, which sometimes terminate fatally.

Among other events, collections of pus may be formed after the tenth day, with permanent fever or intense accessions of the same, and chills from purulent absorption. The pus takes the form of abscesses, or furuncles, or a diffuse collection over a large surface. In the latter days of the period of eruption, or during the *stadium decrustationis*, severe pains are felt in the affected parts, which are frequently at first not increased by pressure, and are not declared by any symptom until an œdematous swelling and an indistinct fluctuation are perceived, and unhealthy pus is found on deep puncture. Occasionally, after severe pains, a hæmorrhagic blister is developed, which causes us to fear gangrene, and makes the prognosis unfavorable. The destruction proceeds rapidly, and after a week the soft parts are reduced to a tinder-like crust. The internal organs, especially the lungs, may be also the seat of purulent depositions.

Prognosis.—In general, the prognosis in variola is favorable; it is absolutely unfavorable only in new-born infants and sucklings. They may, indeed, seem vigorous at first, but presently the voice begins to be husky, they nurse with difficulty, throw the head backward, and soon refuse the breast entirely, and must be fed by hand; finally, this becomes impossible, and death follows in two or three days. The prognosis is also less favorable

in the case of puerperal and pregnant women; in the latter, abortion or early delivery is almost certain to happen. The prognosis is likewise unpropitious in the case of drunkards, cachectic persons, and convalescents after severe diseases.

Therapeutics.—Neither warm nor cold temperature can prevent the eruption of small-pox: quite as ineffectual are pressure upon the skin, astringents, and caustics. HEBRA, by way of experiment, treated variola by the method of PRIESSNITZ, and they did well; he enveloped the extremities in strips of adhesive plaster, and fewer pustules were formed, probably because less blood reached the skin. Ung. mercur. and emplast. de Vigo had but little effect, and collodion quite as little. Corrosive sublimate in the form of dressings or baths, from which the coagulation of the albumen was expected, was likewise unsuccessful; for the water-dressings 5 grains to the pound were used, and for baths 3ij to 3ss to six pails of water. The *ectrotic method* (destroying the pustules with a stick of nitrate of silver) is inefficacious and painful, and alike useless and tiresome is the evacuation of the contents of each pustule. Tincture of iodine (ʒj iod. to 3j alcohol) and ferrum sesquichlor. (3j to water 3j), painted on once or twice daily, from the fourth to the tenth days of the disease, sometimes hastens the formation and separation of the crusts.

In the regular course of variola there is no need of medication. Such a remedy alone would be appropriate as would prevent its outbreak, shorten its course, or prevent the reabsorption of the contents. In ordinary cases we give no medicine, and nothing but water and soup to drink. In drunkards we recommend opium, 6–8–10 grains daily, or wine; when chills occur, we give quinine, 10 to 12 grains the dose.

The observation that the outer portion of the lip is covered with thick crusts, in consequence of its exposure to the atmospheric air, while its inner surface is free from efflorescences, in consequence of its maceration by mucus and saliva, led HEBRA to bring the external skin to a state of maceration, resembling that of the mucous membranes. To this end, one extremity, for example, was, during the stage of florition, wrapped in a warm, moist cloth, and this covered with oiled-silk. The evaporation of the fluid contents of the eruption being thus

hindered, the action of the air which would favor the more rapid decomposition of the exuded material is likewise lessened; the horny epidermal layer is also macerated, and can easily rupture and be cast off. The first trials verified the theoretical supposition; a comparison with the extremity not enveloped showed, after a few days, that the individual pustules were less tense, their covering softer, their contents were lighter, and the collateral œdema less.

We had experience with the *continual bath* only in one case of variola vera, which was placed in water during the *stadium eruptionis*, was attacked by pleuro-pneumonia, and a year after presented himself to us with a pyothorax resulting from the prolonged pleurisy. In the *stadium floritionis* a bath for four hours a day is of service (HEBRA), as the course is thereby shortened. *Saracenia purpurea* has been lately lauded as a specific in small-pox. Its chemical analysis gives gum, starch, vegetable albumen, tannin, resin, a bitter principle, phosphate of lime, potash, soda, iron, and silicic acid. Clinical experiences with it are very differently stated. We have not used it.

Formation of Cicatrices.—A host of remedies have been extolled as preventing the disfiguration of the face by the formation of scars and the deposit of pigment which so frequently remain after the close of the variolous process: these all, however, must be unsuccessful, from the fact that losses of substance can only be replaced by cicatricial tissue, and intense inflammations as a rule are followed by the deposition of pigment. Therefore, the deeper the pustules extend, the more the corium and subcutaneous tissue are involved in the inflammatory process, and so much greater is the probability of the formation of scars. This occurs most frequently in variola vera, and generally, of one hundred patients, fifty will bear marks of it afterward (HEBRA); but scars may also remain after varioloid and varicella, if the inflammatory process has extended deeply. After the crusts have fallen off, the scars are of a dark-red color, and elevated above the level of the skin; they afterward grow pale, contract, and cause less and less disfiguration, according to their age.

But it must also be stated that the pock-marks often *not only do not grow smaller*, but increase in breadth and height soon after their formation, and may produce disfigurements, and even result in the formation of painful tumors, which we designate as *false keloid*, and whose further spread no remedy can check.

Although we are not able to prevent the formation of scars, yet we can cause them to be less disfiguring, and that by evacuating the purulent contents as soon as possible, or causing a coagulation of the pus. This is done by the remedies already mentioned; thus, the emplastr. mercuriale de Vigo * alone, or in connection with emplastr. diachyl. simpl. cum oleo lini $\bar{a}\bar{a}$ equal parts, will macerate the pock-pustules and hasten the decrustation. Cataplasms produce the same result, but they do not suit the skin of the face. Painting with tincture of iodine, as before spoken of, will likewise cause a more rapid decrustation. Corrosive sublimate, spirit of camphor, and zinc-salve, are of but little service. We cannot, therefore, prevent the formation of pock-marks by any means in our power, but we may, to some extent, modify their appearance.

Variola Verrucosa.—Besides the cicatrices, which frequently remain a life-long seal of the small-pox, special mention should be made of some affections of the hair-follicles and sebaceous glands which appear soon after the termination of variola, and disfigure the skin of the face, especially that of the nose. These are similar to the diseases of retention in the cutaneous glands produced by other causes, and depend partly on a mechanical occlusion of their orifices by the variolous crusts, and partly on the participation of the glands themselves in the inflammatory process. They take the form of: 1. Comedo; 2. Acne pustulosa and indurata; 3. Wart-like elevations, in whose centre is seen the orifice of the follicle (*variola verrucosa*); 4. Teat-like, soft, pendant tumors; 5. Cicatricial bands.

Comedones arising from the discharge of the glandular secretion being thus prevented, present no differences from those coming from other causes, except that the quantity of sebum is very considerable, and therefore after their removal a very wide, gaping orifice is visible.

[* See United States Dispensatory.—L. D. B.]

Far more frequent is that affection known as *variola verrucosa*, namely, wart-like elevations, at first of a pale-red color, and afterward more dirty-brown, in the centre of which one or more orifices of follicular glands and hair-follicles may be seen. These are caused by a hypersecretion in the glands coincident with the inflammatory process in the skin. After the removal of the crust, the secretion, finding no further hinderance, distends the follicle in breadth and height, and thereby occasions these elevations, which at first increase and then gradually diminish in size, and finally completely disappear. They may also cause considerable disfigurement of the face for weeks and months after the termination of the small-pox.

Occasionally we have an *inflammatory seborrhœa* as a sequence, accompanied with the formation of yellow, honey-like crusts, which, if not artificially removed, may remain adherent for a long time, especially on the nose. In other cases, acne efflorescences remain, which suppurate, and very rarely lupus erythematosus results from this affection. Other sequelæ, seen especially on the sides of the nose, are as follows:

Reddened, wart-like prominences of one or more lines in length, with broad bases, not unlike the acute condylomata (Spitzen Condylomen). If we remove them, we find externally a thin epidermis and the rete Malpighii, within, new connective tissue and a central cavity, in which is a dark-brown, crumbling, sebaceous mass. These are, therefore, especial formations, *sui generis*, which, according to my observations, occur also in molluscum contagiosum, and which appear to have arisen from closure of the follicular orifice, accumulation of the sebaceous matter, and the consequent expansion of the walls of the follicle. They are found only after very severe cases of small-pox, and occasion not inconsiderable disfigurement of the nose.

We find also, finally, bands of skin spanning healthy portions, and under which we can pass a sound.

Treatment.—The same remedies which are of service in seborrhœa and acne will here also be used with success. The excrescences and bands of skin are to be removed with the scissors.

VACCINATION.

This, as is known, was introduced by JENNER, in the year 1796, and since that time has been practised in all civilized lands. Although it gives no absolute protection against small-pox, yet the severity of the process is so modified thereby that those who have been vaccinated will mostly have vari-cella or varioloid, and those not vaccinated, variola vera. The mortality of the non-vaccinated is likewise greater than that of the vaccinated; fourteen per cent. of the former die on the average, of the latter but four per cent.

Vaccination is performed either from arm to arm, or with vaccine lymph preserved in tubes, or with the original cow-pox. The arm-to-arm method is the best when feasible, because the matter is fresh, and present in any quantity desired, and also because we then have the opportunity of carefully examining the child from whom the vaccine is taken. The methods are: 1. A small vesicant is applied; and, after the removal of the cuticle, either a vaccine crust or pure lymph is rubbed in. 2. A slight horizontal and vertical incision is made in the skin with the so-called inoculating-needle previously charged with vaccine. 3. The needle, bearing the virus, may be thrust horizontally into the skin. 4. The matter may be first applied to the skin, which is then scratched with a needle; this method is certainly the best, as it produces the least pain and the smallest wound. We vaccinate both arms at the same time, and make three insertions on each, and even if but one vaccine pustule follows, the end of the vaccination is accomplished.* On the fourth day after the inoculation we notice a papule; this is developed on the fifth and sixth days into a vesicle, which enlarges until the eighth day, and then contains some pus.† The purulent contents

* For a practical consideration of this subject, see Appendix A.—L. D. B.

† Many investigators have left us researches worthy of attention concerning the constituents of vaccine lymph, of which those of KEBER, in Dantzie (*Virchow's Archiv.*, 42), deserve mention. KEBER found, both in the vaccine lymph and in the normal variola lymph, peculiar organic corpuscles, and a very active cell-process; even clear vaccine lymph contains epidermal fragments, pus, and blood-corpuscles. The lymph coagulates after a while, and the crust retains its efficacy after long preservation. He found granular cells of from $\frac{1}{100}$ to $\frac{1}{200}$ of a line in diameter, free nuclei and immeasurable atoms. These granules break up into

increase until the ninth day, after which desiccation begins and a scab is formed which adheres till the twenty-first day. *Pure vaccine matter is obtained only on the eighth day.* Several affections may follow as complications of vaccination:

1. *Vaccine erysipelas* makes its appearance, generally, between the seventh and tenth days. It is at first confined to the immediate neighborhood of the pustule, and sometimes spreads rapidly over the whole extremity, and even on to the body: occasionally it makes its appearance first on some other portion of the skin, as on the lower extremities. As soon as the extension of the erysipelas is noticed, deep incisions should be made, and the pus evacuated from the pustules, as in this way we can best prevent the further spread of the disease.
2. *Vaccinola*. At the same time with the efflorescences on the vaccinated places, vesicles appear on the other portions of the body, filled with a gummy fluid, whose contents, when again transferred to other persons, produce varicella or varioloid.
3. *Roseola vaccina* is a diffuse reddening of the skin which appears in the course of vaccination.
4. *Stone-pock (variola vaccina, atrophica)*, in which, instead of pustules being found, there are vesicles or blebs, which quickly dry.
5. *Eczema-pock*. Several vesicles are developed around the vaccinated spots, which itch greatly, and appear especially in reduced and scrofulous patients. Moreover, we may also have furuncles, abscesses, and gangrene, around the inoculated spots, as a result of vaccination.

Some fever and disquietude usually occur in children between the seventh and ninth days, but that is no contraindication for early vaccination; it may be performed even fourteen days after birth, and no regard need be paid as to the season of the year. The communication of various diseases by vaccination is more conjectured than proved; this is true of scrofula, tuberculosis, etc.

smaller particles and subdivide, and two, four, or six of them often adhere together; these cell-formations are the proper vehicles of the small-pox poison. In old lymph crystals are found. He found the same in the lymph of variola, and in the blood of small-pox patients. That these bodies are not the result of decomposition is shown by the fact that lymph alone retains its efficacy in which this cell-process has not been destroyed by chemical decomposition.

HALLIER developed penicillum, aspergillus, and mucor from the micrococcus of vaccine lymph in its various stages.

As to the *inoculation of syphilis* by vaccination, of which so many cases have been reported, especially in the last ten years, we have never had it occur in our experience. From the experiments which have been made, however, we note the following: If we vaccinate with a material consisting one-half of the pus of a chancre, and one-half of vaccine matter, we notice a depression in the vesicle on the eighth day, and, when the cuticle is removed, an ulcer is found which bears the characters of a soft chancre; with a little practice, such a place is easily recognized, and care will be taken not to vaccinate from it any further. When vaccination is performed on a healthy person with lymph from a vaccinated syphilitic patient, and blood is mingled with the matter, then, instead of a vaccine pustule being developed, there is an infiltration which shows clearly the character of the *ulcus induratum*; if, however, the lymph is taken pure, without the admixture of blood, then, in most cases, a pustule results, which gives no sign of syphilis. Therefore, we should adopt the rule to *vaccinate with pure lymph, with which no blood is mingled*.

Vaccine lymph has been recommended for the *cure of syphilis*. The method, according to JELSCHINSKI, consists in applying vaccine lymph to the syphilitic person in twenty places, within a short space of time; these, says the author, will take regularly, and cause the symptoms of syphilis to subside. It is hard to conceive this beforehand, and contrary to experience, that so great a number should take in so short a period, for, as is known, out of one hundred persons revaccinated at twenty years of age, but sixty succeed; yet, on the body of a person affected with a small papular syphilide, we have ourselves made twenty vaccinations, of which sixteen took, while those made repeatedly with fresh lymph after several weeks failed.

We lately had an opportunity of studying the effect of a similar but more intense contagion on syphilis, namely, small-pox, and we arrived at the following conclusions: Macular, papular, and squamous syphilides disappear during the course of variola, as do all other eruptions on the skin during every febrile affection. Syphilitic ulcers become foul, and covered with a thick yellow exudation; the pustules accumulate in

great numbers upon broad condylomata. When, however, the variolous process has run its course, the earlier appearances of syphilis return, although in milder form, since during the small-pox a certain interval of time has elapsed, during which the poison of syphilis has lost its intensity. Since the influence of small-pox on syphilis then is so insignificant, that of vaccina, a less intense contagion, is certainly more trifling.

Small-pox is readily confluent on those places where a chronic or acute inflammation exists; thus it is intensely confluent when occurring with eczema, and when the latter is general, and especially when it is moist, the life of the patient is in great danger. A great accumulation of the pock-pustules is likewise found on psoriatic patches; also in scabies, and in all chronic affections of the skin. When pruriginous or ichthyotic patients are attacked by variola vera, they are frequently freed from their chronic diseases.

[The American student will be surprised at our author's division of small-pox, whereby he classes *varicella* with and makes it merely a variety of *variola*, declaring that the morbid process is the same in variola vera, variola modificata, and varicella. In this he follows his master, HEBRA, who asserts it strongly in his writings. HEBRA's arguments are, that, during epidemics of small-pox, cases of varicella constantly appear in the same house with variola, some of the family having one disease, others the other, and that cases of variola have given rise by infection to varicella, and *vice versa*; he further states that when the variolous virus has been introduced into the child's hospital it has been followed in many cases by variola vera with fatal results, while others had but varicella, and that the severest form of small-pox may be seen in some who have been vaccinated, while others not thus protected, and exposed to the same infection, received but varicella. True to theory, HEBRA places his varicellous patients in the same wards with those having varioloid and variola vera, and he himself stated to me that those who had gone through varicella *were not attacked by small-pox* after being confined in the same rooms with those thus diseased. The arguments are strong, notwithstanding the disbelief of the large portion of the professional world in the theory; WILSON, TILBURY FOX, HUNT, GREGORY, PARKES, WATSON, and AITKEN, among English writers, BAZIN, BAUDOT, and CAZENAVE, among the French, and BÄREN-SPRUNG, SIMON, and LOCKER, of the German school, hold to the opposite opinion.

HEBERDEN, in the year 1767, was the first to avow the notion that variola and varicella are different diseases, which opinion has since generally been adopted. Dr. THOMPSON, of Edinburgh, in 1820, "revived the exploded doctrine of its identity with small-pox;" GREEN (1837) confounds

varicella with varioloid; RAYER (1835) does the same. I quote from GREGORY his excellent summary of the diagnostic marks: "Observe the marked differences between the two disorders. Varicella has not the incubative period of variola. It has not the character of variolous eruption. Children take it almost exclusively; I do not say that adults never take it. I have seen a few adult females attacked by it, but it is of rare occurrence. This is not like variola. But far and above all, it is taken indiscriminately by those who have and those who have not been vaccinated. Its course is not in the slightest degree altered by previously undergoing vaccination. It is now nearly always taken *after* vaccination. Whether it was taken equally after inoculation of small-pox I cannot tell you from my own experience, but I have the authority of Sir Henry Hallford for saying that it was; and there are few physicians now besides himself who can be appealed to on such a point. These general considerations are of themselves sufficient to decide the question of non-identity." To these subjective phenomena we add that the physical appearances differ greatly. In *varicella* we do not have the shotty feel of the vesicles in their forming stage, as in *variola*. The former are not umbilicated, there is no division into cells, and there is no slough formed; the whole process of varicella is very rapid.

The practical point involved in this differentiation relates to the exposure of patients with varicella to the contagion of small-pox. I should be very loath thus to risk life and health, because it is by no means proved that chicken-pox affords any immunity to those who have passed through it, from the attack of variola.

Very little can be said as to the treatment of simple uncomplicated cases of variola. As is the case with other epidemic diseases, fresh air and cleanliness are elements of great importance in their management. Other indications are given by Gregory as follows:

"1. To moderate the violence of febrile excitement whenever we meet with it.

"2. To check and relieve local determinations of blood at whatever period of the disease they arise.

"3. To support the powers of the system when it lags, either from the malignity of the poison, or the long continuance of the disorder.

"4. To combat, by appropriate means, concomitant disease."

The patient is undoubtedly greatly relieved by the exhibition of cooling saline laxatives from time to time, with an occasional dose of opium. The tension of the skin is alleviated by keeping the parts moist with an astringent wash, and when the disease is confluent I find several authors recommend the application of a solution of nitrate of silver (3j-℥viij ad aq. ℥j), brushed over the face from time to time, commencing the third day of the eruption, as being both grateful to the patient, allaying the heat, itching, and tension of the face and scalp, and abating the cutaneous inflammation. It is said also to give no pain, and to leave the features perfectly free from pitting.—L. D. B.]

MEASLES.

Syn. *Morbilli, Rubella, Masern, Flecken, Rougeole*.*—NEUMANN.

By this name we designate a disease in which spots or papules, separated from each other, appear over the whole surface of the body, which is accompanied with fever and a catarrhal affection of the mucous membrane of the respiratory tract, runs an acute and typical course, and is contagious.

Pathology and Etiology.—We know nothing about the first source of this disease; but it is a fact that measles never appear without infection having taken place from some patient sick with the same disorder, although it is not always possible to prove the origin of contagion. The infectious matter, the contagion of measles, has never been demonstrated chemically or microscopically, nor do we know its character, whether it is organic or inorganic. (The question of its fungous nature is still doubtful.) The secretions of the respiratory tract, the tears, and the blood, convey the poison, and inoculations which have been made with these fluids on healthy persons have resulted in an eruption of measles. But the exhalations from the skin and lungs seem also to contain the poison, since peculiarly susceptible persons have been attacked by measles when they have only remained in the vicinity of patients with it. The duration of the *period of incubation* amounts to about twelve or fourteen days, but may be longer when the affected individuals suffer already from another disease. As far as we know at present, the liability to infection from measles is greatest while the eruption lasts; many cases seem to show the possibility of infection during the *stadium prodromorum*, but there is certainly no danger during the stage of desquamation.

All are liable to measles; but the predisposition ceases after a single attack, for the rest of life. From the frequency of epidemics of measles in populous districts, most persons are attacked by it during childhood, and in this sense only is it a children's disease; for in places which are isolated, and therefore seldom visited by measles, the disposition to the disease does not show itself to be greater in children than in adults. The epidemic observed by PANUM in the Faroe Islands was the

* HEBRA, "Pathologie und Therapie," pp. 81-158; NIEMEYER, pp. 514-541.

first which had appeared on those isolated shores for sixty-five years; accordingly, almost all the inhabitants were attacked by it who had not passed that age, or who had not experienced the disease in some other country.

Children under a year of age often remain exempt during epidemics of measles, and also the very old. Acute and chronic diseases, as also pregnancy and childbed, do not afford protection against the measles; but we find that the eruption does not generally appear until after the acute disease, during which infection has taken place, has run its course.

Measles occur in more or less widely-spread epidemics; their extent depending principally on the length of time which has elapsed since the last epidemic, and on the consequent number of persons who have not yet been attacked. Limited epidemics of measles usually appear every three or four years, more extensive ones every eight or ten years. The inhabitants of thickly-populated districts are proportionally more affected than those dwelling in the country. The duration of epidemics is generally in inverse ratio to their severity, and this again to the frequency of recurrence; the shorter they are, the more severe; and the more frequently they recur, so much the more favorable is their course.

What we call the character of the epidemic depends, perhaps, not so much on any malignant or benignant quality in the poison itself, as on the coincidence of various collateral circumstances, such as changes in the weather, the season of the year, other prevailing diseases, or preceding epidemics of other diseases. In this manner are we to understand the *septic* or *asthenic* character of measles, and the above-mentioned influences, together with individual peculiarities, are a reason for the anomalies and complications with other diseases in the course of measles. Inflammatory affections of the respiratory organs, as also whooping-cough, are noticed as the most frequent precursors of measles epidemics.

Anatomy.—*No trace of the normal exanthem can be found on the dead body; if, however, the disease was accompanied by hæmorrhages into the tissue of the cutis, these are recognizable after death. The mucous membrane of the respiratory tract presents the pathological changes of catarrhal inflamma-*

tion, which, however, can in no way be distinguished from those of an ordinary catarrh. During life the skin of measles-patients undergoes the following alterations: numerous roundish red spots of the size of a lentil arise, which are soon elevated somewhat above the surrounding tissue, and generally have a papule in their centre. These become confluent in many places and form irregularly crescentic patches, or they remain isolated, and leave the cutis between of a normal color. The face is commonly somewhat œdematous. According to G. SIMON, the papules arise from the collection of small quantities of inflammatory exudation in circumscribed places, mostly where the hairs penetrate the skin. The blood is deficient in fibrine, generally thin and of dark color, but may be thick like tar. *The complications*, which in most cases are the causa mortis, are recognized on the corpse by their characteristic pathological results.

Symptoms and Course.—After the expiration of the period of incubation, which gives no evidence of infection having taken place, the stadium prodromorum sets in.

1. The *Stadium prodromorum* is ushered in generally by several chills, or, more rarely, by a single one, with a varying sensation of heat. With these come lassitude, pain in the joints and head, and dryness of skin. These febrile symptoms, which increase toward evening, offer no assistance as to the diagnosis of the impending disease. More diagnostic is the appearance of a catarrhal inflammation of the nasal mucous membrane, which spreads more or less to the tissue about the eyes, larynx, and trachea. Then follow frequent sneezing and flow of mucus from the nose, which may thus be rendered impassable to air; epistaxis sometimes occurs. The eyes burn, are red and sensitive to light, the secretion of tears is increased; there is also generally an oppressive pain in the frontal region and over the eyebrows. The voice is frequently husky, the cough harsh and hollow, and sounds as if a severe laryngeal catarrh and croup were being developed. This stage generally lasts from three to five days, longer, indeed, in many cases, during which the symptoms spoken of present a varying intensity, but very seldom endanger life.

2. *Stadium Eruptionis.*—The second stage begins with an

exacerbation of the fever. The temperature of the body is elevated, the frequency of pulse considerably increased, and sometimes convulsions occur, as may be the case in all severe febrile affections. The exanthem first appears on the face, around the eyes and mouth, and extends thence gradually over the whole body. The fine red points which are elevated above the skin are recognized by the touch before they are perceived by the eye, and are hardly distinguishable from the beginning of an eruption of variola; yet even at this period the soft palate presents the dark-red spots, generally irregular, seldom round, which are characteristic of measles. After twenty-four hours the spots and papules have increased in size and intensity of color, have spread over the entire body, and are now readily recognized as measles. But there are cases in which a longer time is required for the complete appearance of the eruption; others in which it is confined to limited portions; others in which it is but indistinctly developed; and, finally, the eruption may fail entirely (*morbilli sine exanthem*). The general disturbances, the febrile and catarrhal symptoms, increase in intensity with the appearance of the eruption, and with its completion reach also their highest point. There is frequently far more danger to life during this stage than in the prodromal, but this only in malignant epidemics; the temperature of the body may reach such an excessive height that death ensues in consequence of general paralysis or adynamia (measles of an *asthenic*, *nervous*, or, if hæmorrhages occur in the cutis, of a *septic* character). Fortunately, epidemics of so malignant a type are rare, and the stage of eruption is generally easily and safely passed.

3. *Stadium Florescentiæ*.—When the eruption is mostly developed, the disease passes into the stage of florescence. The exanthem reaches its greatest height and remains at this point about twenty-four hours, after which it begins to fade. The fever moderates or ceases entirely; the catarrhal affections continue, but are considerably milder. The photophobia is less, the secretion of the nasal mucous membrane is more scanty and thicker, sneezing happens less frequently, the voice is less hoarse, the cough is easier, and children who do not swallow their spittle expectorate muco-purulent masses (*sputa cocta*).

The efflorescences which first appeared fade on the third or fourth day, or disappear entirely, the later ones following; a bright-yellow spot usually marking their location for a short time. Such is the normal course of the disease in most patients, and in, most epidemics, with no important modifications; and, if during the prodromal and eruptive stages no especial deviations occur, we call the disease *morbilli vulgares, simplices, or erethici*. Other and far more severe is the course of those designated as *inflammatory* or *synochial*. In these the very numerous confluent spots, which have appeared with the most urgent symptoms, not only do not fade after twenty-four hours, but grow darker and remain visible for several days. They often assume a bluish or violet tinge, which does not disappear on pressure, a state which is explained by the rupture of the overloaded capillaries, as hæmorrhages occur in other inflammatory affections of the skin also. With this the heart's action is increased, the frequency, fulness, and force of the pulse augmented. The catarrhal affections of the mucous membranes likewise increase in this form of measles and extend farther; or, instead of them, we may have a croupous inflammation which frequently reaches to the alveoli of the lungs, and the mucous membrane of the stomach and intestines may also take on catarrhal inflammation. If in this stage whooping-cough sets in and the characteristic dyspnœa of laryngitis, a more serious state may be feared. The dyspnœa increases, the breath fails, and collapse occurs. This form of measles is frequently complicated with lobar and lobular pneumonia, which is announced by an increase of the fever, frequency of respiration, and pain in the side, when the inflammation extends to the pleura; with these severe symptoms the eruption suddenly disappears. This *recession of the eruption*, justly feared by the laity, is not, however, the cause of these severe symptoms, but a consequence of serious internal disease. The consolidation of the lung in lobar pneumonia is recognized on physical examination. Although the larger part of these cases have a protracted course, they most commonly result in recovery. The symptoms belonging to the complications gradually disappearing, the disease passes into the desquamative stage.

Besides the synochial form, we have also the asthenic, ner-

vous, torpid, or septic measles, which, however, are better designated as measles with a *typhoid course*, which may likewise be complicated with lobar pneumonia, in which the temperature may rise to an unusual height, and the heart's activity, which was at first increased, becomes weakened and paralyzed. The eruption then has a pale-red color, or a bluish or violet hue, when there are hæmorrhages into the cutis; petechiæ are sometimes found between the maculæ of measles, showing a diseased condition of the cutaneous capillaries, as is also announced by profuse epistaxis. In this form of the disease, most of the children who have passed the earlier stages in safety die in a profound collapse, sopor, and with a small and greatly accelerated pulse.

4. *Stadium Desquamationis*.—In normal cases this stage begins on the eighth or ninth day after the stage of florescence. The spots at this time have entirely disappeared, and are succeeded by desquamation, which is more clearly seen on the uncovered portions of the body than on those covered. The fever has by this time completely ceased, and the catarrhal symptoms slowly subside.

Although this stage of measles is more frequently than all the others free from complications, still it is not always so, for a croupous laryngitis may interrupt the hitherto favorable course of the disease, and bring danger. Gangrene of the face or of the labia may occur, though very rarely (*noma*).

Besides lobular and lobar pneumonia, and croupous inflammation of the mucous membranes, other complications occur in measles, as, diphtheria, scorbutus, tussis convulsiva, tuberculosis, and gangrene of the lung. As sequelæ we have consumption, and a long list of scrofulous affections, such as inflammation of the eyes, ozæna catarrhalis, otorrhœa, glandular swellings, chronic inflammation of the periosteum and of the joints.

Therapeutics.—As almost every one must some time or other pass through the disease, it is not advisable to use prophylactic measures, such as the removal of healthy children from the sick, or those suspected of infection, except during malignant epidemics. Since, further, no means is at our command which promises a favorable influence on the disease, all medicinal interference should be abstained from, and the attention confined

to a proper regimen. The temperature of the sick-chamber should be maintained at 13° – 15° Réaumur (61° – 65° Fahrenheit), and the air in the room changed daily. The patient may be washed with lukewarm water and the linen changed, with the precaution that the body does not remain too long uncovered, and that the linen be dry and well warmed. The room should be moderately darkened, to correspond to the amount of conjunctivitis present. As long as there is fever, thin soup and bread should be given, and cooked fruit when the bowels are confined; meat-broth and milk are not given until the fever has ceased; after which the diet may gradually be made more nourishing. The patients should keep their room while the stage of desquamation and cough lasts. Revoking the receded eruption by means of irritating applications is irrational and directly injurious. The therapeutics of complications must be regulated according to their requirements, and one must not be led astray by the exanthem. Thus in the typhoid form, as also in lobar and lobular pneumonia, when the temperature ranges high, quinine must be administered, four to eight grains a day, according to the age of the child.

[**Diagnosis.**—As our author omits the differential diagnosis, I give that of GREGORY:

“1. Measles and scarlet fever differ in their incubative periods; scarlet fever lies latent one week, measles two weeks.

“2. Measles and scarlet fever differ in the periods of their eruptive fever. Scarlet fever develops rash in twenty-four hours, measles in seventy-two hours after the setting in of fever.

“3. The two diseases differ in color and aspect of the efflorescence. In scarlatina it is bright scarlet; in measles of a dull, raspberry red. In scarlatina the eruption is extensive and diffused, brightest on parts covered; in measles it is in patches, brightest on parts exposed.

“4. The diseases differ in the concomitant affection of the mucous tissues. In scarlatina there is early and often serious inflammation and sloughing of the throat; in measles the mucous affection is chiefly in the nose, eyes, and larynx. There is no disposition to cynanche or its consequences.

“5. The two diseases differ in their secondary actions. Scarlet fever is accompanied and followed by phrenitis and dropsy; measles by pneumonia.

“6. The two diseases differ, lastly, in their tolerance of remedies; measles bears bloodletting well, scarlet fever badly.”

To these may be added the character of the desquamation, which is in flakes, sometimes of considerable size, in scarlatina; in measles it is fine and branny.

Although measles is a self-limited disease, and usually runs a favorable course, slight medication is of service in most cases, both for the patient's own sake, and the satisfaction of friends and physician, to say nothing of the prevention of worse treatment on the part of attendants by a rational one under the control of the medical adviser.

In the prodromal stage and beginning of the eruptive, the tongue is usually furred and the patient restless and troublesome, the skin feels hot and dry, the bowels are frequently bound. In such a state the relief is very great which is afforded by a gentle laxative (as the effervescing citrate of magnesia, a wineglassful every two hours till the bowels move, or less, proportionate), a warm bath, and the exhibition of very small doses of the tinct. aconit. rad. (from quarter of a drop to a drop every two hours), or a spoonful of syrup of ipecac. in a tumbler of lemonized flaxseed-tea sipped frequently. I have recently heard the hydrate of chloral praised very highly in one of the New-York societies, as giving great comfort in the restless nights of the eruptive and florition stage both of measles and scarlatina. It may be given even to very young children (gr. $\frac{1}{2}$ to grs. v. or over), and, in the cases in which I made use of it, it proved very satisfactory.

WILSON speaks of "the specific remedy," carbonate of ammonia; he recommends five grains to be given in solution in water, broth, or milk, every three hours—in severe cases every hour or two—this as soon as rubeola is suspected or developed, after clearing the alimentary canal with a mild purgative. He also advocates treating a retrocession of the eruption with stimulants to the skin. WATSON advises only the warm bath.—L. D. B.]

3. SCARLATINA.

Syn. *Scarlet Fever*, *Scharlachfieber*, NEUMANN; *Morbilli Confluentes*, *Febris Anginosa*, *Angina Erysipelatosa*.—L. D. B.

Scarlet fever is an acute, contagious disease, characterized by a scarlet red rash over the whole or greater part of the surface of the body, accompanied with fever and an inflammatory affection of the throat.

Pathology and Etiology.—It can be proved in almost every case that scarlatina originates in infection; although we cannot with full certainty deny its independent origin. The contagion of scarlet fever is quite as unknown to us as that of measles; it appears to be contained in the exhalations of the patient, and to be communicated to the surrounding atmosphere, and persons liable to it may be infected by merely being in the neighborhood of a scarlet-fever patient, and, again, the poison may be spread by one who himself is not attacked. Since the time of infection can hardly ever be determined with accuracy, the period of incubation cannot be definitely fixed; it appears

to be shorter than that of measles, and to amount to about eight days. The disposition to take the disease is not so general as in measles, and ceases, after a single attack, for the whole life. Children who have passed the second year are the most susceptible, although adults and even old persons may have it. In large cities scarlet fever almost never ceases to exist, and sporadic cases continually occur. The causes of its periodical epidemic appearance are unknown.

Anatomy.—During life the skin presents the phenomena of general hyperæmia of a high grade, and inflammatory œdema of the superficial layers of the cutis. The redness begins as numerous small points, which coalesce, and produce a uniformly punctate redness over the whole surface (*scarlatina larigata*). In *scarlatina variegata* we have irregular spots, generally of a dark-red color upon the otherwise pale-red skin. If the inflammatory exudation collects in circumscribed points, small papules are formed (*scarlatina papulosa*). The epidermis is often covered with numerous minute vesicles (*s. miliaris* or *vesicularis*), or with larger ones having clear water-like or turbid or yellow contents (*s. pemphigoidea* or *pustulosa*). Petechiæ and diffuse ecchymoses occur only in malignant cases. The other pathological appearances found on the bodies of scarlatina patients belong mostly to the complicating or consequent diseases. The blood is generally dark, watery, and deficient in fibrine; the spleen and intestinal glands are often swollen.

E. WAGNER (*Archiv. für Heilkunde*) found new lymphatic formation, especially in the liver, spleen, kidneys, and small intestines; in the liver it appeared as white granules, seen even with the naked eye; in one case the liver was of twice the normal size.

Symptoms and Course.—In simple cases of scarlet fever we have only the exanthem, more or less angina, and a slight hyperæmia of the kidneys.

In most cases there is but little, if any, disturbance of the health during the stage of incubation; sometimes we have lassitude, depression, and *malaise*.

The *stadium prodromorum* is ushered in by febrile symptoms, frequent chills alternated with burning heat, pulse of 140

a minute, and an elevation of temperature to 32° R. (104° Fahr.). To these are soon associated head-symptoms, dizziness, or severe headache, nausea or vomiting, redness and swelling of the tonsils and soft palate, all parts of which are more or less affected. In both scarlatina and measles the soft palate is early reddened, even before the *angina* occurs; in measles this is in patches, while in scarlatina it is more or less evenly punctated. There is a feeling of dryness and burning in the throat, which is increased by the movements of deglutition. General relaxation, coma, delirium, and convulsions are the more frequent symptoms in children during this stage, which lasts sometimes only a few hours, generally from one to three days, or may be entirely absent, as when the eruption appears with the beginning of the symptoms above described.

The occurrence and intensity of the prodromal symptoms depend partly on the patient, partly on influences unknown to us; in some they are very slight.

The *stadium eruptionis* begins with an exacerbation of the fever, and the other phenomena. The eruption appears in the form of fine red points thickly set, first on the neck, spreading thence to the breast and over the whole body. The face generally remains free, the redness only being somewhat increased by fever and congestion. The angina increases, and the redness of the mucous membrane becomes more intense; the tongue, from which its epithelium has been shed, acquires a dark raspberry red, and its surface becomes rough from the swollen papillæ (cat's tongue). Deviations from the symptoms described, such as an uncommonly rapid extension of the eruption, a greater or less intensity of the redness and of the angina, have no essential influence upon the further course of the disease. Complications with catarrh of the larynx, trachea, and bronchi, are by no means rare.

In the *stadium floritionis*, the fever rises until the second day, when it commonly reaches its highest point, and when the eruption also is at its acme; the throat-symptoms are likewise greatest at this time. The whole system is profoundly implicated; a great quantity of shed epithelium is found in the urine, also traces of albumen. The phenomena of disease now decrease in severity, the frequency of pulse is gradually lowered,

the eruption fades in the same order in which it spread, and after two or three days a brown pigmentation alone is found; the inflammation of the organs of deglutition likewise gradually abates. This stage usually lasts six days, until the entrance of the *stadium desquamationis*.

The desquamation proceeds, with a constant decline of the symptoms given, in the same order in which the exanthem appeared, so that it is announced first on the neck, by a loosening of the epidermis in the form of small scales. In other places, the epidermis is exfoliated according to the intensity of the eruption, on the extremities frequently in great lamellæ (*desquamatio membranacea*), or in fine scales (*desquamatio furfuracea*). This stage lasts from eight to fourteen days, during which the last traces of fever and of the angina have left, and in ordinary cases complete recovery ensues.

Scarlatina follows the course portrayed in the greater proportion of favorable epidemics, and in sporadic cases. Anomalies of course, however, and complications with other diseases, occur more frequently in scarlet fever than in measles and small-pox.

We have already stated the various forms under which the eruption appears, and their designations; the eruption may, however, be *entirely absent*, and then we speak of *scarlatina sine exanthem*, which is distinguished from simple angina only by the higher grade of fever and proportionate constitutional disturbance, and can be diagnosticated as scarlet fever with certainty only by reference to an existing epidemic of the same. It may be mistaken for an ordinary widespread erythema or many forms of roseola. During the course of scarlet fever, some of the symptoms mentioned often rise to such a height as to throw into the background the appearances on the integument. As in measles, the fever may assume a malignant character, the patients dying with the symptoms of intense adynamia. It is yet uncertain whether the fatal influence on the nervous system, and especially on that of the heart, results from scarlatinal blood-poisoning, or whether it is caused by the excessive elevation of temperature. The symptoms of *scarlatina maligna* with asthenic or typhous character are very much the same as those of asthenic or typhous measles, and

of the same forms of other acute inflammatory and infectious diseases. The patients are very weak, and lie listless, or are entirely comatose. The pulse is very small, and can hardly be counted, the tongue dry, and covered with sordes; the body is often very hot, while the extremities are cold; the pupils dilated; spasms or general convulsions often occur, and death follows with symptoms of collapse, often accompanied with œdema of the lungs. If they survive the prodromal stage, the eruption appears very slowly and irregularly, and is of a pale-red, livid color, often with petechiæ, which remain after the disappearance of the exanthem. The appearance of the eruption does not improve the condition of the patient; most die in this stage, and those who do reach the *stadium desquamationis* usually die from subsequent diseases consequent upon it.

A second symptom often developed into an independent disease, and which endangers the life of the patient, is parenchymatous *inflammation of the tonsils*. This occurs on the appearance of the eruption, or more rarely in its stage of full development, and produces great difficulty in deglutition and obstruction of the nostrils. Generally both tonsils are attacked, and the swelling becomes so considerable that they often touch each other or leave only a very small space between.

The tissue around the tonsils is also involved in the process. The disease, which reaches its height in two or three days, gives rise to congestions of the head, exacerbation of the fever, swelling of the face, and great disquietude, and ends in the formation of an abscess, or gangrene in the worst cases. The pus, which is evacuated through several openings, is generally swallowed by children; frequently an enlargement of the tonsils remains. The gangrene is recognized by the cadaverous smell before it is perceived by the eye, especially in children. It soon extends to the surrounding parts and terminates life with accelerated pulse, quickened respiration, cold extremities, and retention of urine and feces. If the consequences of the commencing suppuration or gangrene are not decided, the disease is not much aggravated.

The complication of a *diphtheritic inflammation* of the tonsils and the surrounding parts is peculiar to many epidemics. In its first stage this presents by no means a threatening char-

acter; the difficulty in swallowing is not remarkably great; the nasal cavities and fauces are almost always attacked at the same time, and at the beginning an apparently harmless secretion flows from the nose, which, however, afterward changes into a yellowish, offensive one, and irritates the skin over which it flows. On inspection of the mouth and pharynx, dingy-white patches may be seen adhering to the red œdematous mucous membrane, which soon become detached, and leave unhealthy ulcers.

The cervical glands on both sides are swollen. The patients lie in a comatose condition; the pulse is small and very frequent, and the temperature greatly elevated—to 41° – 42° Celsius (106° – 107.5° Fahr.). Sometimes a laryngitis, which is shown more by hoarseness than by cough, complicates the disease and hastens death. These complications have no influence upon the exanthem; if the patients survive this stage, the ulcers heal very slowly, especially those at the corners of the mouth. The inflammation sometimes extends through the Eustachian tube into the cavity of the tympanum, and gives rise there to an internal otitis, which may lead to perforation of the membrane, and to caries of the petrous bone, causing an obstinate otorrhœa, and a more or less considerable deafness during the whole of life.

During or shortly after the *stadium floescentiæ*, inflammation of the subcutaneous cellular tissue and the submaxillary glands may lead to great danger. This affection is similar to the typhous metastases. A painful swelling forms on both sides of the neck, at the angle of the jaw, which is recognized rather by its hardness than by redness or swelling of the skin; it increases rapidly in size, and seldom ends in resolution, much oftener in formation of abscess and gangrene. The abscess is usually spontaneously evacuated at its lowest point, if not by artificial means; if this latter is neglected, the pus may burrow downward. Gangrene is afterward associated with it, or is developed from the first as a gangrenous bleb, and rapidly destroys all the soft parts, until the patient dies either from exhaustion or some complication. This malady is analogous to the noma or gangrene of the vulva after measles.

Our limits will not allow even the attempt to describe com-

pletely the other complications of scarlet fever or its sequelæ, and we will merely enumerate them. Croupous nephritis and inflammation of the serous and synovial membranes are frequent concomitants. As sequelæ, by which we understand diseases which make their appearance after the termination of the scarlatinal process and in consequence of changes occurring during the same, we may mention: ozæna, affections of the organs of hearing, enlargement and suppuration of the tonsils, mostly in scrofulous subjects. The most frequent consequent is dropsy, whose mode of origin is yet obscure, but which is probably connected with a localization of the scarlatinal poison in the kidneys. The dropsy may or may not be connected with albuminuria; it attacks mostly the subcutaneous cellular tissue, but may also affect the other organs, as also the serous cavities.

Therapeutics.—There have been not an inconsiderable number of remedies used as prophylactics, which, however, have soon proved themselves worthless: even belladonna, which is in great repute among the homœopathists, affords no protection against the contagion of scarlatina. Under these circumstances, the separation of the well from the sick is the best protection, and in malignant epidemics is to be imperatively demanded. In the treatment of scarlet fever we should be guided by the same principles we have laid down for the treatment of measles. The temperature of the sick-chamber should be regulated, and not over 12° R. (59° Fahr.); it must be properly ventilated, and the patient may be washed with care. Fresh water and lemonade are appropriate drinks; as nourishment, watery soups, bread, and, later, milk and meat-broth, are proper. The patient must be kept in bed even during the period of desquamation, and in winter must remain in the room for fourteen days more. Favorable, normal cases end thus in recovery, without any medication. In malignant cases, especially with a high fever and elevated temperature, the hydropaths esteem the repeated envelopment of the patient in wet cloths. If paralysis threatens, we endeavor to prevent it by strong stimulants, as ammon. carb., camphor, and musk. Diphtheritic ulcers are to be touched with nitrate of silver, or with liq. ferri. sesquichlor. and water, in equal parts. We may use the aqua calcis, recently so much praised, either as a gargle, or,

where that is impossible, internally, with the addition of syrup of blackberry, a dessertspoonful every half-hour. It may be used as an injection in coryza diphtheritica. We may also mention that the applications by means of brushes have been almost entirely abandoned; for the coryza we inject a weak solution of nitrate of silver into the nasal cavities.

[It is of vital importance that the room in which scarlatina patients are kept should be *aired thoroughly* twice a day; the windows and doors should be thrown wide open, and change of air promoted in every way for from five to fifteen minutes morning and night (winter and summer), the patients being meanwhile protected by extra covering, and a blanket being draped from the head of the bed, as a canopy to keep off the draught. This will have the effect to shorten the attack and to render those around much less liable to take the disease, also causing it to be much less severe in those who are infected.

We can recommend most highly the constant use from the first of a mixture containing chlorate of potash and muriated tincture of iron, given in rather large doses every two or three hours; it seems to do more toward preventing and allaying the throat complication than any local remedies. Chloral may be employed to give quiet (*see MEASLES*). When the skin is very hot and burning, much relief and improvement of symptoms are obtained by sponging the surface with tepid vinegar-and-water; inunctions with lard are useful in soothing the inflamed skin.

We cannot be too careful during the desquamative stage in guarding against exposure to cold; our main resource, when albuminuria with anasarca does occur, is in a free action of the skin, assisted by wearing woollen under-garments, occasional warm or vapor baths, and plenty of diluent drinks.—L. D. B.]

b. INFLAMMATIONS FROM INFECTION WITH ANIMAL POISONS.

1. MALIGNANT PUSTULE.

Syn. *Pustula Maligna*, *Milzbrand-Karbunkel*, NEUMANN; *Anthraxion Ignis Persicus*, *Charbon Maligne*.—L. D. B.

After the immediate inoculation from handling decomposing animal substances (by butchers, flayers, shepherds, etc.), or in consequence of the sting of certain insects, a small, livid red spot first shows itself, which is very rapidly developed into a hard swelling, at whose apex a small pustule is seen. The pustule ruptures, and the infiltration increases. Gangrenous destruction of the infiltration now takes place, and rapid disorganization of the soft parts down to the bone follows, with

collateral œdema; these proceed with great pain and with typhoid general symptoms. Death succeeds, as a rule, in two or three days. The original disease usually starts from the bare portions of the body, as the hands, forearms, and face.

As long as the process is confined to a small portion of the skin, the infiltration may be burned out with the actual cautery, or with caustic potash; the destruction of the poison can alone save the life of the person affected. Where the infected spot is favorably situated for the use of the knife, excision of the infiltration is the safest means.

2. DISSECTION WOUNDS.

Severe forms of disease occur in anatomists, servants in dissection-rooms, and butchers, from infection with the poison of dead bodies. The infection takes place through wounds, and also on parts of the skin seemingly sound; in the latter case the poison may perhaps be retained in a follicle. Severe local inflammation immediately commences at the spot, which very soon involves the lymphatics and their glands, from which extensive suppurative inflammations of the skin or glandular suppuration follow, with severe febrile phenomena. As the infection takes place, as a rule, on the hand, it is the upper extremity which is usually attacked by lymphangitis and pseudo-erysipelas. The suppuration generally attacks the glands of the axilla, remaining confined there, or a suppurative pleuro-pneumonia ensues, or general pyæmic infection of the blood, that is, pyæmia, with fatal termination.

More frequent than this is the so-called dissection wart or callus (*Sectionswarze*). A circumscribed inflammation in the form of an acne-pustule is developed at the point of infection, or a furuncular infiltration, which remains as a red painful tumor, and gradually increases in firmness. The surface of the tumor undergoes a superficial ulcerative process, appears cracked and split, and is covered with a thick crust of pus. They seldom heal spontaneously.

Treatment.—Wounds should be carefully protected by adhesive plaster whenever one has any thing to do with dead bodies; a wound received during dissection should be carefully washed and allowed to bleed freely. Only after wounds

received from very suspicious corpses, especially of those who have died of pyæmia and puerperal fever, do we require to apply caustic (acetic acid, or a solution of caustic potash). The lymphangitis is treated best on surgical principles, by perfect rest of the affected extremity, frictions with the ung. ciner., and cold-water dressings.

The dissection-callus sometimes disappears under continued maceration with plaster; it can be removed with certainty alone by cauterization with solid nitrate of silver.

3. GLANDERS.

Syn. *Maliasmus*, *Malleus Humidus*, *Rotzkrankheit*, NEUMANN; *Equinia*, *Farcinoma*, *Farcy*.—L. D. B.

This comes either from contact with the poison of the so-called glanders, a disease of horses, or from inhalation of air impregnated with the glanders-poison, as in horse-stalls. Hard, knotty infiltrations make their appearance on the skin and mucous membrane, especially of the respiratory tract, with severe fever, and rheumatic pains in the joints. A rapid ulceration of the infiltrated points sets in, and the neighborhood of the ulcer is subject to erysipelatous inflammation. As a rule, new accessions constantly occur, especially on the face, which in turn ulcerate, and thus we may have suppuration of large portions of the skin; this may proceed even to the bone, and cause destruction of the nose, ulceration of the larynx, and various lymphatic glands. Death supervenes with pyæmic symptoms, attended with inflammatory infiltration which rapidly suppurates, in the internal organs, the lungs, liver, kidneys, and also in the joints.

The **therapeutics** are essentially prophylactic; recovery occurs only rarely, and such cases run a very chronic course.

To this class belong also the inflammatory processes resulting from the bites of poisonous snakes, and from the sting of insects, scorpions, etc.

c. DIPHTHERITIC INFLAMMATION.

Any part of the skin when deprived of its epidermis (excoriations, wounds, ulcers, and ruptured pustules) may become the starting-point of a peculiar destructive process, termed diphtheritic inflammation. Most probably this is caused in

every case by an infection from without, possibly by a vegetable organism.

The disease very rarely appears except during the prevalence of erysipelas, furuncles, and phlegmonous inflammations of the skin, or when diphtheria of the various mucous membranes (conjunctiva, palate, pharynx, and female genitals) is present. Places divested of epidermis become covered with a grayish-yellow membrane, which adheres firmly to its base; this membrane soon becomes infiltrated with serum, and is rejected in shreds, and exhales a bad odor. At the same time, small vesicles make their appearance, which quickly rupture, leaving irregularly-indented ulcers which have the appearance of being corroded, while new diphtheritic membrane is continually formed. By this process the tissue is transformed into a foul, discolored mass, and great loss of substance results therefrom in a short time. The diphtheritis either limits itself spontaneously, or progresses and causes death by exhaustion or pyæmia.

Therapeutics.—As soon as the diphtheritic membrane appears, caustics must be applied, the best being the liquor. ferri sesquichlor. with equal parts of water, creosote, carbolic acid, gr. x, ad ung. 3 ij, etc. Nothing but the destruction of the diphtheritic membrane can prevent with any certainty the further advance of the fatal process.

B. NON-CONTAGIOUS INFLAMMATIONS.

a. ERYTHEMATOUS INFLAMMATIONS.

The common characteristic of these is an inflammation in the superficial layer of the corium of variable extent, which may occasionally involve more than the papillary layer, and embrace even the whole thickness of the cutis. If vesicles or blebs are formed, the losses of substances resulting heal without cicatrices.

1. ERYTHEMA.

Syn. *Maculæ Volaticæ, Intertrigo, Dartre erythémôide, Hautrotte, Inflammatory Blush, Tooth Rash.*—L. D. B.

HIERBA calls this class *erythema exudativum*, in distinction from those which are embraced under the heading *hyperæmiæ*. According to the various forms, he distinguishes erythema

papulatum, er. tuberculatum, er. iris, er. gyratum, er. annulare, er. diffusum—which names designate in reality only the various stages of development of one and the same disease, while *erythema urticans*, *er. nodosum*, and *er. intertrigo*, are quite different.

By *erythema* we understand an inflammation of the skin in the form of spots, papules, or nodules, whose characteristic phenomena are redness, slight burning pain, moderate serous infiltration, and short duration. To its essentially clinical signs belongs also the feeling of itching.

a. *Erythema papulatum* is the most frequent form of this malady. This appears most commonly on the back of the hands and feet, but also on other portions of the extremities, as also on the trunk, in the form of papules of the size of a pin's head, elevated above the skin, which are surrounded by a red areola. The disease generally occurs in the spring and fall, principally in children and young people up to twenty years of age; it is often seen repeatedly on the same persons at a particular season of the year, accompanying the epidemic spread of herpes (which is but a more developed stage of this disease), and with purpura simplex. The peripheral redness disappears in a few days, and only the central papule remains as a small crust or thin scale. The erythema vanishes spontaneously, without leaving behind it any pigment, and gives the patient no trouble beyond a slight burning. In children during the first year of life, it returns more frequently than in adults, and can easily be mistaken for prurigo.

As diagnostic marks we have—1. The locality. Prurigo attacks the extensor surfaces of the extremities, while the flexures remain free, even when the disease is severe; erythema, on the contrary, comes also on the flexor surfaces. 2. The body is affected in prurigo only when the eruption is very severe, while in erythema it may appear here first. 3. In prurigo there is severe itching, while it does not exist in erythema. 4. In prurigo we find pigmentary residua after some duration of the disease, but not in erythema.

A single observation is not always sufficient to establish an accurate diagnosis, which, however, can be made by repeated inspection.

b. *Erythema annulare* arises from the flattening and fading of the central papule, and the continued extension of the peripheral redness which gives rise to the circular form.

c. *Erythema iris*, so called from the variegated hue of the eruption, comes from successive additions of exudation to the periphery of an existing efflorescence. These leave various colored stains, each according to its duration.

d. *Erythema gyratum* and *marginatum* are the result of the confluence of several groups of erythema, whose centres fade, while their peripheries remain as reddened and serpentine lines.

e. *Erythema intertrigo*.—From long contact or friction of two proximate surfaces of skin, favored by the elevated temperature and the retained and decomposing excretions (sweat and urine), we have, first, reddening of the skin and inflammation, with a subsequent formation of vesicles or blebs; even ulcers and gangrene sometimes occur, especially in debilitated children. Various kinds of morbid changes in the skin have been described under the name intertrigo. There is doubtless a special predisposition to their development in some children (HEBRA), for we frequently find that the children of day-laborers, who often lie the whole day in their excrements, without care, are not affected with intertrigo, while sometimes those best cared for are repeatedly attacked. Just as bed-sores are most frequent on those reduced by diseases, so intertrigo follows disturbance of the nourishment, or other diseases, although derangements of nutrition are by no means absolutely necessary to frequent attacks.

f. *Erythema nodosum* results from a serous, or sometimes a hæmorrhagic exudation deep down in the skin, producing tumors beneath the corium, from the size of half a walnut to that of the fist. They are most common on the legs and face, and are usually accompanied with œdema of the superficial layer of the skin. The efflorescences stand isolated from each other, are at first colorless, becoming yellow afterward, and also brownish red, blue, etc., according to the various colors of the exudation, so that the affected spots have a resemblance to those coming from a contusion, or perhaps from a blow. I have had children brought to me from public institutions whose superintendents have been charged with having inflicted cor-

poreal punishment, while only erythema nodosum was present. The disease is seen mostly in young persons, and, before the appearances described are manifested on the skin, we find loss of appetite, an unpleasant feeling on pressure in the region of the stomach, great uneasiness on motion, etc.

BOHN (*Jahrbuch für Kinderheilkunde*, Heft. 4, 1868) considers erythema nodosum to be the same disease as peliosis rheumatica. Each spot represents, in a certain measure, an inflammatory infarction, which has its origin in embolism of the cutaneous capillaries. The same may also happen in peliosis rheumatica, which frequently appears combined with erythema.

When the above-mentioned œdema comes on the extensor surface of the knee-joint, it is readily mistaken for serous effusion into the joint, especially when the œdema has completely obliterated the furrows on both sides of the patella. When the disease comes on the face, the eyelids swell as in dropsy; the inflammation frequently extends along the course of the lymphatics.

In rare cases, erythema nodosum occurs as a chronic disease, in which case the skin is thickened, infiltrated, and hard. The **diagnosis** can be accurately determined only by the dark-red periphery of such spots, frequently from the size of a silver dollar to that of the flat of the hand.

The **prognosis** is favorable; the disease commonly disappears in the course of several weeks, occasionally not until after a number of months.

Treatment.—All the forms of erythema will disappear spontaneously in a short time; but erythema nodosum requires a horizontal posture of the extremity, and the application of cold-water dressings, either alone or with Goulard's extract. If cold applications are not grateful, warm may be used. (For the treatment of erythema intertrigo, *see* under the head of "ECZEMA.")

[WILSON divides erythema into hyperæmic and exudative, giving much the same subdivisions as HEBRA. The *erythema multifforme* of the latter is but a name applied by him to erythema papulatum, tuberculatum, annulare, iris, and gyratum, collectively, which he considers only different stages of the same disease. TILBURY FOX calls them idiopathic and symptomatic; BAZIN admits an external and internal cause of erythema, but differs greatly from other writers in the arrangement of the different varieties under these heads. HARDY makes three kinds: 1. From a local cause; 2. Those with general phenomena; 3. Symptomatic and secondary.

Under the first are érythème simple, vésiculo-pustuleux, and intertrigo; the second embraces érythème papuleux, noueux (nodosum), scarlatiniforme, mamelonné (tuberculatum), copaibique; the third includes érythème lisse (in anasarca), paratime (bed-sores), and pernio (chilblains).—L. D. B.]

2. PELLAGRA.

Syn. *Elephantiasis Italica*, *Scorbuto Alpino*, *Mal de Sole*, *Scorbutic Paralysis*.—L. D. B.

Unfortunately, we must, in this chapter, content ourselves with the observations of others, as we have had no personal experience with this disease. The malady prevails among the poor population in Venice, Lombardy, Piedmont, Parma, Modena, Ferrara, Bologna, and Tuscany, also in the south of France, Asturia (*mal de la rosa*), and in the neighborhood of Alcaniz in Spain (as *mal del higado*, or *mal del monte*), in FERMOSILLA and Galicia, and may appear also sporadically in other lands.

In the *first stage*, erythema appears on the skin, as a part of the disease present in the system. The malady breaks out in the spring and summer, especially during the months from April to June, and involves the portions of the body exposed to the sun, as the hands, forearms, neck, breast, back, and in females also on the face. It disappears with the beginning of winter, leaving behind it pigment and desquamation. A few days after its appearance, a furfuraceous desquamation takes place, and the skin looks as though it had had lime-water poured over it. When the scales fall off, the skin appears of a bright-red color and shining; it gradually grows pale white. Severe burning is added as a subjective sensation. At the same time there are lassitude and mental uneasiness, the patients becoming sad and taciturn.

In the *second stage* there occur pains in the head, dizziness, cramps, stiffness in the muscles, failing of the mental powers, melancholia religiosa, and with these marasmus, œdema, dropsy, and acute inflammations of the internal organs, which soon cause death. The skin becomes thicker, darker, and more dry, and cutis anserina is seen. The epidermis is exfoliated in scales, the sebaceous glands are marked by black points, acne indurata is formed, and the derma becomes atrophically thinned and shining. The pathological anatomy of this disease has not yet thrown any light on it. It lasts three to five, more

rarely eight to twelve years, attacks a larger number of women than men, and generally comes between the thirtieth and thirty-fifth year of life. A diet on Indian corn is said by the Italian physicians to be the cause of the disease; others attribute it to a vegetable parasite infecting the corn. Dr. ULLERSPERGER (in *El Siglo Médico*, Madrid) says that, according to careful investigations which have been made in Spain, in none of the patients did the disease proceed from a corn-diet, and also that the hands were in every case first affected.

FRANKEL (*Virch. Arch.*, 43 B., 3 Heft) translates the account of some cases published by Dr. Golgi (*Gazzett. Med. Prov. Venet.*, Anno XI.), together with the results of *post-mortem* examinations.

In one case erythema with desquamation was seen on the backs of the hands and neck; after one year the patient experienced dizziness, exhaustion, and formication on the back. The skin assumed an olive-green color. Death ensued, with the phenomena of meteorismus, systolic murmur of the heart, and paresis of the lower extremities. In another case, published by Prof. Lambrosio, symptoms of melancholy prevailed at the same time; and in a third case there were severe attacks of mania.

Post-mortem Appearances.—The heart-tissue degenerated, liver and kidneys fatty, and depositions of yellow pigment masses, together with numerous fat-cells, in the walls of the capillaries of the brain.

As to treatment, first of all a change of place of abode and food must be advised; in addition to this, arsenic.

3. ROSEOLA.

Syn. Rosalia, Rose Rash, False Measles.—L. D. B.

Of the many species of roseola presented by WILLAN (miliaris, annulata, autumnalis, etc.), the one most worthy of attention is that which comes in many forms, in the different stages of typhus fever. In some epidemics these erythematous efflorescences, as also the petechial hæmorrhages under the skin, are very prominent in the beginning of the typhous affection. Such complications always give a very unfavorable prognosis for the course of the fever. If the patient recovers, a slight desquamation of the skin takes place.

The so-called *roseola rheumatica*, which comes over the whole surface of the skin, especially around the smaller joints, in the form of red spots of the size of the nail at the utmost, and which is accompanied with swelling of the joints, and great pain in

them, is to be reckoned among the erythemata, but must not be considered as a disease *sui generis*, for the erythematous eruption accompanies other febrile diseases.

[Roseola receives more attention from other writers; it is universally divided into *idiopathic* and *symptomatic*, the most important of the former being roseola infantilis, æstiva, autumnalis, and annulata (CAZENAVE); of the latter group, roseola variolosa, vaccinia, febrilis, and rheumatica, will oftenest attract our attention. These subdivisions are of no very great importance, but need to be known, since the terms are in general use. As may be imagined, the *roseola infantilis* is an occurrence during and from dentition; *r. æstiva*, the most severe form, is more common in summer, and is usually preceded by pretty sharp febrile symptoms, and in children slight delirium and even convulsions often supervene. Roseola variolosa or exanthematica is the principal variety of the second group. "It happens occasionally that after one, two, or three days of fever, a roseolous rash is suddenly thrown out over the face, neck, arms, and back, in irregular patches. In some cases this eruption assumes the aspect of scarlatina. On the second or third day from the appearance of this rose-colored or scarlet rash, pimples display themselves in the very midst of these patches. These gradually advance and in three days more show the depressed centres of variola" (GREGORY). The other varieties of the second group speak for themselves.

Diagnosis.—"Roseola has frequently been confounded with measles and scarlatina. The spots of roseola are nearly circular, and are always circumscribed; they are of a deep rose-color, larger than those of measles, and smaller than those of scarlatina. The patches of measles are small, irregularly semilunar, and of a bright-red color; those of scarlet fever are large and diffused, and of a raspberry-tint. Both these diseases are contagious, and their symptoms are peculiar to themselves. The most experienced physician, however, may mistake them when they begin to appear. Roseola annulata is distinguished from herpes iris by the absence of vesicles and the large size of its rings. Roseola is always a mild affection" (CAZENAVE). It is not commonly followed by desquamation.

The **therapeutics** consist in gentle laxatives, light bitters, and the mineral acids, with regulated diet. No local treatment.—L. D. B.]

4. URTICARIA.

Syn. *Cnidosis*, *Febris Urticata*, *Nesselsucht*, *Porzellanfieber*, NEUMANN; *Aspretudo*, *Urticaire*, *Nettle-Rash*.—L. D. B.

The characters of urticaria are: an eruption of quaddels, wheals, or pomphi, that is, elevated efflorescences, broader than they are high, of various sizes, from that of a lentil to the size of a silver dollar, or even much larger; generally light in the centre, reddened on the periphery, and which itch and burn

excessively. They may appear over the whole surface of the body, are attended with some œdematous swelling, and generally disappear very quickly.

The eruption is produced by an exudation in the superficial layers of the corium, such as may be artificially produced by injecting water horizontally under the skin with a hypodermic syringe, whereby the blood is crowded from the superficial capillaries. I examined with the microscope fresh quaddels which had been excited on rabbits by striking them with nettles, and the condition found was œdematous swelling of the tissue of the cutis, with diminution of blood.

Etiology.—The disease results from the indulgence in certain articles of food, as oysters, snails, crabs, mushrooms, fish, strawberries, pickles, vinegar, honey, and sausages, with regard to which certain persons have idiosyncrasies; or it may proceed from internal diseases (stomach, renal, and especially uterine and ovarian); again, it may be produced by the immediate effect of local irritants, as, for example, nettle, bed-bug bites, a slight continued scratching, friction with turpentine, etc. The internal use of balsam of copaiba and cubebs sometimes causes urticaria; and, finally, intestinal worms (*oxyuris vermicularis*, *tænia*), also intermittent fever, and jaundice, are sometimes attended with urticaria.

The course is either *acute* or *chronic*, and generally lasts from one to two weeks, often a shorter time; or the course may be subacute, and new quaddels appear from time to time, in consequence of certain exciting causes. The wheals may or may not be followed by desquamation. In some cases there are febrile phenomena. Urticaria is found mostly on the trunk; in the face it is usually associated with œdema of the eyelids.*

* Under *urticaria hæmorrhagica*, Dr. JÜTTE (*Zeitschrift für Klin. Med.*, 1859) describes the following affection:

A reddened, itching quaddel is formed a half to three-quarters of an inch in diameter. After a few hours the redness deepens; subcutaneous hæmorrhage ensues, and the extravasation goes through various changes of color. Similar eruptions were described by WILLAN and RAYER, under the name *purpura urticata*.

The process is called *urticaria bullosa* when the quaddels go on to the formation of blebs, whose contents dry to crusts.

Dr. VILLAN (*Schmidt's Jahrbuch*, 1860) describes *urticaria evanida* with two dif-

Urticaria may be complicated with other diseases; with prurigo, especially in children, where the quaddels are produced by the slight but continued scratching; likewise with erythema (erythema urticans). The latter form, also called *lichen urticatus*, or, more rightly, *urticaria papulosa*, appears generally on the back of the hands and feet, and on the face, in the form of pale-red papules or tubercles, from the size of a pin's head to that of a pea; and, like urticaria, runs an acute course, or has repeated subacute recurrences, or may be chronic. The acute efflorescences disappear in the course of one or two weeks; the chronic may last for months, or years, and are especially unpleasant when occurring in the face, since they are very apt to be mistaken for syphilitic papules.

The **therapeutics** of urticaria must have regard both to the cause and to the local affection. When it is dependent upon disturbances of digestion or external irritants, we can succeed completely in curing the disease; but not so often when urticaria is connected with disorders of the sexual system and chronic diseases of other organs. The local treatment consists in the application of cold, in the form of douches, baths, and cold-water dressings, or in washing the affected parts with vinegar-and-water, or with a mixture of alcohol $\frac{3}{4}$ vj and acetic acid $\frac{3}{4}$ j, or cologne-water, or, finally, in dusting the skin with powdered starch. Washings with acetic and citric acid are of little value; quite as useless is the dilute sulphuric acid. On the other hand, the application of emplastrum mercuriale has been found to be efficacious in urticaria papulosa. It is sufficient to

ferent forms, one of which arises spontaneously and disappears quickly, while the other comes only from friction on the skin and energetic muscular action. The writer presents the latter as a special form (*urticaria factitia*), as he has never met it in connection with the former. If, on a skin peculiarly disposed, we draw shapes and figures with a blunt instrument, they will shortly appear in raised lines like wheals. This muscular sensibility is more or less present in every one, but in some becomes morbidly increased, and gives much annoyance, so that even washing with a sponge, etc., may give rise to urticaria. The ridges are produced by the contraction of the cutaneous muscles (?). Chloroform and ice check their formation, and cause them immediately to disappear.

Urticaria tuberosa (PET. FRANK) has been seen five times by Dr. FOURQUET (*Berlin. Klin. Wochenschrift*). Movable swellings are formed, whitish, from the size of a walnut to that of a hen's egg, especially on the lower extremities, which last at the most but a day, and disappear with desquamation.

keep the affected parts covered with the remedy during the night alone.

[Our author has hardly emphasized sufficiently the necessity of a careful regulation of the diet and habits of life of patients afflicted with this at times most distressing and rebellious affection. Sometimes in chronic or subacute cases we must carefully go over every article of diet and luxury to find the irritating cause. Flannel worn next to the skin may often occasion it, and the disease cannot be cured until this is removed. In no disease of the skin can we trace so directly as in urticaria the connection with disorder of the digestive organs. In the acute attacks we find it quickly follows the ingestion of certain articles of food, and so we may reason that, in the more chronic varieties, some error in digestion, primary or secondary, is at the basis of the affection. When the eruption is acute and produced by irritating food, vomiting should be immediately excited, or, if more time has elapsed since it was taken into the stomach, a moderate purgative will be required to remove the offending cause.

Acidity will often be found to prevail in urticaria, and in the subacute form antacids are of service, thus: *R.* Bismuth nitrat. gr. v, sod. bicarb. gr. xx, pulv. zinzib. gr. ij, M.; one such powder before meals (LIVINGE). Or—*R.* Pulv. rhei, gr. ijss, sod. bicarb. gr. ijss, pulv. ipecac. gr. ʒ, M., ft. pil.; one such before meals. Liquor potassæ, with sweet spirits of nitre, tincture of hyoseyamus and gentian, or cinchona, will often give relief. The alkaline mineral waters are also of service. But HARDY well remarks that there are other cases dependent on an alkaline dyspepsia, where the acids are indicated. He says: "I have many times, in grave cases, seen a favorable effect promptly follow the administration of nitric acid lemonade, and a lukewarm bath, with the addition of half an ounce by weight of nitric acid." Several writers advocate the employment of colchicum, as increasing the excretion of urea, which is found to be deficient in the urine of these patients. When the complaint is intermittent, quinine should be given in tolerably large doses. Arsenic has been of service in the hands of some. For external treatment, BAZIN recommends lotions of marsh-mallow, flaxseed, or poppy-seed, with corrosive sublimate, cyanide of potassium, or alkalies; CAZENAVE says that vapor-baths will be found very efficacious. WILSON speaks of ablution with juniper-tar or carbolic-acid soap; he recommends also a lotion of emulsion of bitter almonds with hydrocyanic acid.—L. D. B.]

5. ERYSIPELAS.

Syn. *Rothlauf*, *Hautrose*, NEUMANN; *Febris Erysipelatosa*, *Dermatitis Symptomatica*, *St. Anthony's Fire*.—L. D. B.

Erysipelas is a diffuse inflammation of the skin, as a rule infectious, which rapidly spreads over large surfaces, and is accompanied with febrile movement. It generally begins with a sharp chill, during which the temperature of the body rises

to 40° C. (104° Fahr.) and over. Accompanying this are disturbances of the stomach and brain. Delirium and stupor are common in erysipelas of the face and head. These phenomena increase with the advance of the disease, frequently to a very high grade, and disappear also with the abatement of the cutaneous symptoms, which follows in the course of from eight to fourteen days. The inflammation affects either the superficial portion of the cutis, the papillary layer, alone (*erysipelas erythematosum*), or its whole thickness, embracing also the subcutaneous cellular tissue to a considerable depth (*erysipelas phlegmonosum*). As the disease subsides, the skin becomes of a paler red color, the swelling decreases, but some œdematous thickening may remain for some time; the skin is now covered with abundant scales or crusts, and suppuration of the cellular tissue often occurs, also abscesses and furuncles. The hairs fall from the head and beard, but grow again afterward. Occasionally a gangrenous destruction of some portion of the skin happens.

The part affected with erysipelas is swollen, reddened in various shades, hot, either with a sharply-defined border (*erysipelas marginatum*), or the redness fades insensibly into the healthy color of the neighboring skin (*erysipelas diffusum*); the skin is sometimes elevated in blisters, or covered with crusts. The various forms are, erysipelas erythematosum, vesiculosum, bullosum, pustulosum, crustosum. The eruption may either remain during its whole existence confined to the spot first affected (*erysipelas fixum*), or it spreads, attacking new portions of skin, while it disappears from the original places (*erysipelas migrans*); the form with a sharply-defined margin is without exception migratory, while that in which the border fades gradually into the surrounding healthy skin, is permanent. Erysipelas migrans or erraticum has the peculiarity, that in a relapse it always returns to the first affected spot: so that if the inflammation began on the face, and spread thence over the scalp, neck, back, and down to the heel, it begins anew on the face.

The face is the most common seat of erysipelas, which often starts from diseases of the mucous membrane of the nose, as eczema, syphilitic and lupous ulcers, and also from affec-

tions of the periosteum and the bones, as caries and necrosis. Especially does eczema give rise to those cases of erysipelas which are repeated often during the year—habitual erysipelas—which recur with each return of the eczema. The cause is found in the absorption by the lymphatics of the decomposed eczematous secretions, which are prevented from escaping by the accumulated crusts. Those who are subject to oft-repeated attacks of erysipelas frequently have chronic œdema of the lower eyelids; just as this often results from caries and necrosis of the nasal bones. Migratory erysipelas extends from the face to the forehead, thence to the scalp, and over on the neck. As its existence on the scalp is not readily discernible by the eye, especially in persons with abundant hair, its presence is known by the persistent febrile action, by the pain, and by the peculiar spongy feeling on pressure. These symptoms are important, because the skin of the face may be covered with scales, and the disease may be supposed to have abated, while the true danger is just approaching.

Erysipelas odontalgicum is generally confined to the skin of the cheeks and eyelids, and comes in consequence of suppuration at the root of a tooth, frequently as a chronic affection, disappearing with the removal of the dental tumor. Erysipelas, moreover, attends diseases of the ear, *erysip. otalgicum*; abscesses of the mammæ, *erysip. mammarum*; suppuration of the navel in children, *erysip. umbilici*; further, as *erysip. genitalium*, it is especially frequent after circumcision, and as *erysip. extremitatum*, after variola and vaccine pustules, or any suppurative process; abscesses on the hands and feet very frequently excite *erysip. migrans*, from the absorption of pus by the lymphatics.

Etiology.—The etiology of erysipelas is not yet very clear; as a rule there is some local point of suppuration present, from which the infection spreads to the immediate neighborhood, and that, we suppose, chiefly in the way of lymphatic absorption. But cases of erysipelas continually occur in which no connection with any local affection of the skin can be established, and in such cases we are constrained to assume a blood-poisoning, which, however, may still have come from a local infection, although it cannot always be demonstrated. Erysipelas is

most apt to occur in hospitals in the spring and fall of the year.*

Prognosis.—In no case of acute erysipelas can we give a prognosis at the beginning with any certainty, because we can never

* BILLROTH (*Archiv. für Klin. Chir.*, Berlin, 1867) denies the existence of epidemics of erysipelas, and (as do LAWRENCE and HEBRA) considers it rather as a disease coming from local infection. We extract the most important parts of his interesting paper:

Erysipelas proceeds most frequently from wounds on the lower extremities, the face, etc. It takes its origin, therefore, always from one place, from which the general symptoms follow, while other similar diseases, as measles and scarlet fever, appear equally diffused over the whole surface. There is no such thing as a spontaneous erysipelas capitis, but only an erysipelas traumaticum, phlogisticum and septicum, in the broadest sense of the word; there must, therefore, be some irritating matter with phlogistic properties circulating in the skin, which continues until it meets with obstacles, or until the poison is itself destroyed; the poison at the same time producing pyrexia. BILLROTH further asserts that the poison which enters mingles with the nutrient fluids, is spread with them, and follows the course of the lymphatics. The appearance of red spots points to the fact that the irritating matter, which produces the dilatation of the blood-vessels, always attacks certain limited capillary tracts at once. Since, now, the lymphatics follow in general the course of the veins, the entrance of the poison into a lymphatic net-work, provided with but scanty inosculation, will put the capillary net-work corresponding to this lymphatic plexus also at the same time into a state of irritation, and so a red spot is produced on the skin; the poison follows the fine lymphatic ducts in the skin, and swelling of the glands is never absent. Erysipelas is developed from infection of the blood after operations, or from poison which is introduced into the wound by sponges, compresses, etc.

P. HINCCKES BIRD, who acknowledges both idiopathic and symptomatic erysipelas, presents 260 cases of erysipelas which are not without interest on account of their locality:

| | | | | | | |
|-----------|---------|-----------------------|----|------|----|--------|
| Idiopath. | erysip. | of the head and face, | 34 | men, | 51 | women. |
| Traumat. | " | " " " " " " | 27 | " | 13 | " |
| Idiopath. | " | of the extremities, | 27 | " | 22 | " |
| Traumat. | " | " " " " " " | 59 | " | 27 | " |

Of 81 cases of idiopathic erysipelas of the face, the various portions of the face were affected in the following order of frequency:

| | | | | | | |
|------------------------------|-----|-----------|--------|------|-----------|----------------------------|
| Right side of face, | 56 | per cent. | women, | 50 | per cent. | men. |
| Left " " " " " " | 19 | " | " | 29 | " | " |
| Middle line of face, | | | | 13.7 | per cent. | women, 11.8 per cent. men. |
| Both sides at the same time, | 5.9 | " | " | 2.9 | " | " |

In the 260 cases observed, 20, i. e., $7\frac{1}{2}$ per cent., were fatal; 66 cases occurred in the spring, 49 in summer, 56 in autumn, and 89 in winter: erysipelas is, therefore, far more frequent in winter and spring than in summer and autumn.

Dr. C. HALLER, on the other hand, after a compilation of all the cases of erysipelas occurring in the General Hospital in Vienna during ten years, found that the larger part of the cases were in the months of April, May, October, and November.

check its further spread, nor can we prevent the deposition in the internal organs of the inflammatory products which produce the progressive infection on the skin. Fatal terminations are due to pyæmia, pneumonia, and œdema of the brain, more rarely to meningitis and nephritis. Erysipelas which appears as a decidedly local affection, in consequence of abscesses, is the only one in which the prognosis is favorable.

Anatomy.—Erysipelas consists in a cell-infiltration of the corium, and in severe cases of the subcutaneous cellular tissue

FIG. 11.



a, Cell-infiltration of the corium; *b*, Empty fat-cells, with cellular growth around the membrane; *c*, Connective-tissue fibres crowded apart; *d*, Papillæ enlarged with cellular hyperplasia; *e*, Enlarged blood-vessel; *f*, A hair loosened from its outer root-sheath.

as well. The blood-vessels are greatly enlarged, the connective-tissue fibres lose their sharp contour, become broader, swollen, and finally form a homogeneous mass.

Sometimes abscesses are formed in the papillæ or in the tissue of the cutis itself from the accumulation of exudation-cells. In other places the connective-tissue fibres are separated by fluid, and the blood-vessels are enlarged; the whole layer of the rete Malpighii is dry, the cell nuclei increased in size, transformed as it were into vesicles, within which lie one or two nucleoli.*

The cells of the hair-follicle, of the outer root-sheaths, and of the external layer of the sebaceous glands, are likewise enlarged, and the sebaceous contents form a pulpy mass. The hair-follicle is lifted from the outer root-sheath by serous exudation, as is also the hair from its papilla; the outer root-sheath is found separated from the transparent layer, to the place of the entrance of the latter upon the papilla, and both of the root-sheaths are crowded upon the shaft of the hair (HAIGHT). This increase of cells is greater in phlegmonous than in erythematous erysipelas. The condition given by BIESIADECKI (*Sitzungsberichte der kais. Akad. Wissensch.*, 1867), agrees with my preparations, one of which is represented in Figure 11.

On the bodies of those who die with erysipelas, we find either anaemia in consequence of extensive inflammation, or hyperæmia and acute œdema of the brain, hypostatic pneumonia, œdema of the lungs and glottis, peritonitis, pleuritis, or pericarditis.

We further observe an abnormal condition of the muscular structure of the heart, which organ is also enlarged and easily ruptured; sometimes a parenchymatous inflammation of the liver and kidneys occurs. The walls of the vessels show a deposit of fat nuclei:

The contents of the bullæ of erysipelas were inoculated on rabbits, which died after a few days; and, on examination, the muscular fibres of the heart and body were granular, and the cells of the liver, and the epi-

* VOLKMAN and STEUDENER found an infiltration of the whole cutis and the subcutaneous cellular tissue with small cells, and the vessels enlarged. The papillæ were entirely filled with their vascular loop, and the vessels surrounded by granular cells (white blood-corpuscles), the cell-infiltration being more considerable in the lower part of the cutis than above. The cell-mass, however, quickly disappears, so that after two or three days fine nucleated *dibris* only are seen in the subcutaneous cellular tissue.

thelium of the urinary passages, were somewhat fatty (LIEBERMEISTER, *Schmidt's Jahrbuch*, 1868).

Therapeutics.—As erysipelas is a febrile disease, it is first of all to be treated symptomatically, as any other fever. Acids are given, and, when chills occur, quinine.*

Far more important is the *local treatment*, and this will be especially attended with success when the erysipelas is dependent on abscesses, ulcers, eczema, etc. In such cases, if we destroy the seat of suppuration, the absorption by the lymphatics is checked, and with it the erysipelas. As to whether erysipelas should be treated with warm or cold applications, we would say that, in the beginning, when there is great fever, with tension of the skin, cold and especially ice-cold applications in the form of ice-poultices, are most agreeable to the patient, and are therefore most appropriate, as in all inflammations. We need hardly remark that there is no danger of repercussion or transferring the inflammatory process to internal organs by means of cold. If the disease is on the decline, then cold is generally unpleasant to the patient, and warmth is preferred. Frictions with mercurial salve assist the cure in the beginning; but must not be too long continued, for fear of salivation. In erysipelas migrans mercurial plaster may be applied to the border of the eruption. The method of thrusting a stick of nitrate of silver down to the substance of the corium, and cauterizing the whole border of the erysipelas, is more painful than efficacious. Cauterization of the erysipelatous skin and its surroundings with a solution of nitrate of silver, one part to eight, or painting with tincture of iodine, is warmly recommended by some. Brushing the surface with collodium, or with gutta-percha dissolved in chloroform, is agreeable to the patient at the moment of application and as long as the chloroform or ether evaporates, producing cold, but the application of cold by means of ice-poultices is to be preferred, alone or in combination with the paintings mentioned. Creosote with

* DR. L. MATHEY gives twenty to thirty drops of the tincture of the chloride of iron internally, and believes that the inflammation is thereby limited to two or three days. Of ten patients, three recovered after two days; three after three days; two after four days; one after five, and one after seven days. This remedy is especially suited to lymphatic and debilitated patients.

lard, in the form of an ointment, has been proposed, as also the application of turpentine, or a mixture of alum-water, white precipitate, and glycerine. The local application of ferrum sesquichlor., and ferrum sulphat., in the form of an ointment, has likewise been advised. Venesection, wet cups, scarifications, and leeches, cannot bring the process to a termination any sooner than the expectant treatment.*

[Most authors describe two varieties of erysipelas, the *idiopathic* and the *traumatic*, the former coming from constitutional causes, while the latter is attendant upon wounds. WATSON would consider the former alone as true erysipelas, while our author seems to regard the latter as the rule, only acknowledging that the disease may sometimes occur idiopathically. Few now doubt the possibility of its spread by infection.

As to treatment, WILSON says, "There is one tonic which, above all others, is suitable for erysipelas—in fact, is declared to be specific, and, as far as our experience is concerned, seems to be literally so, namely, the tincture of the perchloride of iron." This is to be given in large doses, πx to xx or more, every two hours. Authorities differ greatly as to external applications. Cold is unquestionably grateful to the patient in the early stages, except that the burning and pain after its removal seem to be worse; it should, therefore, be used continuously, if at all. We may produce it by various evaporating lotions, to which may be added aconite, opium, or camphor. Sometimes more relief is obtained by dusting the parts affected with flour.—L. D. B.]

2. PHLEGMONOUS INFLAMMATION.

1. FURUNCLE.

Syn. *Blutschwür*, NEUMANN; *Phyma Furunculus*, Boil.—L. D. B.

The different kinds of boils are distinguished alone by their intensity; *a.* Follicular furuncle; *b.* Cellular-tissue furuncle.

a. A follicular boil is a circumscribed inflammatory infiltration, having its origin in a hair-follicle or sebaceous gland, which is distinguished by its hard consistence, deep redness, and slow suppurative destruction.

The first symptom in every furuncle is a sensation of pain in the affected part, and a feeling of tension, even before the

* LEBERT is opposed to the expectant treatment, because frequent relapses follow it, and recommends topical bloodletting from the head, tartar-emetic internally in small doses, inunctions locally, low diet, and repeated purging.

skin is reddened; but even at this time an infiltration can be perceived by delicate touch. If we cut into such a spot, we find within a yellow exudation-plug, which is firmly connected with the surrounding parts. This plug acts as an irritant on the neighboring tissue, causes hyperæmia and inflammation, and thus the swollen part becomes more or less elevated above the level of the skin. Suppuration around this core shortly takes place, and the latter becomes loosened, together with the necrosed fibres of the corium, and is finally cast off. The arteries and veins in and around the core are filled with coagulated blood. After the removal of the core the swelling subsides, the pain diminishes, and the loss of substance is replaced by a cicatrix, which is proportionate to the size of the furuncle.

When there are several furuncles at once, febrile phenomena are also present.

b. Cellular-tissue boils are hard, diffuse infiltrations of the corium, which become gangrenous in large portions, and destroy the subcutaneous cellular tissue to a considerable depth, and may become gangrenous. Appearing mostly epidemically in children, these furuncles are located in the subcutaneous tissue, and this is often completely destroyed by suppuration before the hemispherical consistent tumor is discovered. They frequently become confluent, and great portions of the skin slough, so that even the muscular tissue may be exposed. They occur mostly on the scalp and extremities, and especially the thighs. The children that are thus attacked are generally marasmic.

The causes of furuncles are, for the greater part, local; they attend itching cutaneous diseases, as scabies, eczema, prurigo, or they are produced by irritants on the skin, as harsh ointments (sulphur and metallic), or they accompany pediculi vestimentorum; finally, they may be caused by the too frequent use of cold or warm baths, or from the severe effect of a stream douche. They are also produced by the continued breathing of impure air, from a long continuance in moist places, and close rooms with imperfect ventilation. When many boils appear at once on various parts of the body, and come in rapid succession, the disease is called *furunculosis*. This happens from general dis-

turbances of nutrition, with chronic nasal catarrh, intermittent fever, and in consequence of diabetes mellitus. Furunculosis also appears as an epidemic in the spring and fall, at the same time with erysipelas.

It is superfluous to make the distinctions: *furunculus simplex*, when the pus makes its exit through one opening; *furunculus vespaïus*, when from several openings; and *furunculus pannulatus*, when the pus appears through a cleft-like opening.

2. ANTHRAX.

Syn. *Brandschwär*, *Carbuncle*, NEUMANN.

This is distinguished from furuncle by the deep gangrenous destruction of the skin, embracing both the corium and the subcutaneous tissue, whose necrosed masses, together with the scantily-formed pus, are discharged through several sieve-like openings corresponding to the numerous necrosed cores. The neighboring parts are reddened in anthrax, hard to the touch from plastic infiltration, and the vessels plugged up; the subcutaneous tissue is more involved, and in this the suppuration begins first. In large carbuncles, especially on the head and forehead, there is danger of the continuation of the phlebitis to the brain. The most common place of attack is the skin of the neck and back, the upper and under lip, and forehead; more rarely on the extremities. The formation of anthrax is attended with severe tension and pain; the pains are more severe in proportion as the part affected is more or less rich in nerves, and sensitive. There is fever with the first appearance of the carbuncle, as well as during its further course, and, if the process is not limited, chills and pyæmic phenomena may supervene. BOURDON (*Gaz. des Hôpit.*, 1869, 76) records the occurrence of polyuria with furuncle, and defends the connection of anthrax with diabetes.

Treatment of Furuncle and Anthrax.—Free exercise in the open air, and regulation of the diet, are important to check the disposition to furunculosis in those who suffer from boils the whole year in consequence of living continually in close apartments, as counting-rooms and offices. The beneficial effect of various waters containing carbonic acid, which are commonly drunk directly from the springs, is to be ascribed rather to the

altered mode of life than to the waters themselves. In certain obstinate cases the confection of juniper may give assistance, and HARDY recommends especially the *aq. picea*.

Painting with iodine, friction with mercurial ointment, and the application of nitrate of silver, have been recommended as preventing the development of furuncles. But these remedies are incapable of producing any such effect. The best treatment is to open the furuncle with the knife as soon as possible. To diminish the pain during the operation, some anæsthetic may be used; as a freezing mixture, consisting of two parts of snow or ice and one part of common salt. This produces a temperature of from 14° – 20° below zero, R. (= from 0 to 11° below, Fahr.). The mixture is placed in a bag of tulle lace, and the affected part covered with it for ten minutes, the surrounding healthy parts being protected by adhesive plaster from the ice-water coming from it. The furuncle is then opened, and cold-water dressings are applied. This method essentially shortens the process, and is more quickly efficacious than the treatment with adhesive plaster and cataplasms; it is also applicable to anthrax, with the difference that in this several cross-cuts must be made. Instead of the freezing mixture, we may use the local anæsthesia of Richardson, to lessen the pain. Some surgeons immediately, at the first appearance of the carbuncle, paint it with tincture of iodine, or the sesquichloride of iron. We have never been able to see any good results from this course.

PRICHARD (*Brit. Med. Jour.*, 1863) recommends the treatment of anthrax with caustics, as PHYSICK and TRAVERS have suggested. The central portion of the carbuncle is burned with caustic potash, at least a quarter or third part of the whole induration being destroyed. Also, iodine dissolved in collodium is said to have been employed with success.

DEMIRÉ (*Gazette des Hôpît.*, 1865) speaks in favor of an early incision. He prefers, however, immediately after the incision, to cauterize the part with a hot iron, with Canquoin's or the Vienna paste, or with a solution with twenty per cent. of the sesquichloride of iron. This, he says, is the best way of preventing the absorption of the gangrenous matter by the newly-opened vessels—a very exaggerated apprehension.

SOULÉ (*Jour. de Bord.*, 1866) expresses himself as against the treatment with the knife, and in favor of the expectant treatment with emollient poultices. But a large anthrax he first destroys with the Vienna paste and opens on the following day, and then treats with tincture of iodine.

ALPH. GUÉRIE recommends subcutaneous incisions, which are also praised by GOSSELIN, LANGIER, and RICORD. VELPEAU, on the contrary, is decidedly in favor of early incisions, as are likewise NÉLATON and RICHET.

[Although the causes of boils and carbuncles are for the greater part local, we must remember that this only refers to the exciting cause, for there is always a depraved state of the system, a lowered vitality which renders it possible for local irritation to produce the stasis, exudation, and accompanying inflammation, found in these affections. They are frequently associated with dyspepsia, which has worn upon the patient, and a few doses of rhubarb and soda will do much toward hastening the cure, and preventing fresh accessions to the disease. There is frequently a marked anæmia, with loss of appetite, pale tongue, and feeble pulse; these cases need iron and bark, the following being a most serviceable mixture: R. Ferri ammon. citrat 3j, tinct. nuc.-vom. 3 iss., tinct. cinch. comp. ℥iv. M. S. teaspoonful after meals. When frequent boils occur in young females, they are generally found to be constipated, and their menstrual function disordered; in these cases aloes will be required in addition to the above. This is well given in tincture, thus: commence with twenty drops added to the above iron mixture, three times a day, the dose being gradually diminished as the bowels resume their natural functions. TILBURY Fox thinks an inactive liver to be often the cause of mischief, and then recommends podophyllin in repeated doses, and nitro-hydrochloric acid with nux vomica. Locally, he says that most surgeons now favor pressure to relieve pain, and prevent the supply of blood, afterward using caustic applications with poultices to hasten the softening up of the carbuncular swelling; pain being met by opium once or twice a day.—L. D. B.]

3. BOUTON D'ALEP.

Syn. *Pustula Aleppensis*, *Aleppo Evil*.—L. D. B.

This is a chronic inflammatory infiltration of the cutis (J. POLAK, *Allgem. Med. Zeitschrift*), affecting the outer corners of the eyes, the under eyelids, the cheeks, the point of the nose, the lips, and especially on the lower extremities; principally attacking Europeans who have moved to the East; it appears endemically. It is first found at Subaedin, and follows the river-banks of the Orontes to Aleppo and Bagdad, but is seen also in Cyprus, Cairo, Suez, and Teheran. The natives are attacked by it mostly from the first to the seventh year of life; foreigners may have it at any age. The disease occurs but once during life. It begins as a small, red spot, which is gradually developed into an indurated swelling. The edges of the ulcer are thick and infiltrated, the granulations foul. After lasting

from eleven to fourteen months, the ulcer becomes clean, and a scar is formed. Cauterization with nitric acid is recommended as a curative means.

4. PSEUDO-ERYSIPELAS.

By this we understand a diffuse, phlegmonous inflammation of the skin, which generally appears in consequence of a local infection with putrefying animal matter, but which may occur without any known cause. The infiltrated skin appears greatly reddened and swollen, stiff like a board, exceedingly painful; with these there is severe febrile movement. The inflammation generally ends in suppuration, in which the abscesses forming in the subcutaneous cellular tissue become confluent very quickly, and undermine large portions of the skin. The skin finally breaks, the soft parts may become gangrenous in large portions, and in severe cases even the bones may be laid bare of their periosteum, and necrose. The danger from pyæmia is very great in this disease.

The **treatment** is to be directed essentially to the inflammation: the pus must have exit by early incisions, and gangrenous portions of tissue must be removed early to prevent ichorous infection of the blood. If great tracts of skin, as the whole of a lower extremity, are attacked by the disease, the patients, as a rule, die from exhaustion or pyæmia.

3. VESICULAR INFLAMMATIONS.

1. HERPES.

Syn. *Bläschenflechte*, NEUMANN; *Dartre*, *Tetter*, *Olophlyctis*.—L. D. B.

Herpes is an acute, non-contagious disease, running a typical course, in which vesicles or blebs appear in groups upon an erythematously-inflamed portion of the skin. Fever generally precedes its outbreak. The eruption is attended with burning pain, which is very intense in some forms of the disease, and has the characters of a neuralgia; this pain may last long after the disappearance of the eruption.

The following varieties are made according to their locality, arrangement, and form:

a, herpes labialis; b, herpes præputialis or progenialis; herpes iris; herpes circinatus; e, herpes zoster.

a. *Herpes labialis or facialis, hydroa febrilis*.—This comes in connection with febrile diseases, and is especially frequent on the red portion of the lip in the form of a group of vesicles closely set, and of various sizes; these dry to crusts and disappear after a few days, without leaving any cicatrix.

Professor GERHARDT represents the origin of herpes facialis in the following manner: The small arteries which run with the branches of the *trigeminus* in the bony canals undergo considerable diminution in size, in the beginning of a febrile attack, which is followed by dilatation during the hot stage, whereby the nerve-branches are pressed upon and irritated, and a vesicular dermatitis ensues in consequence. GERHARDT lays stress on the fact that the place of election of this eruption is in the region between the chin, ear, and eyebrows.

Coincident with these eruptions in the neighborhood of the lips, or independent of them, similar groups of vesicles come on the mucous membrane of the hard and soft palate,* which, on account of the delicacy of the epithelium, very quickly rupture, and are seen only as reddened points, devoid of epithelium. Herpes occurs also on other parts of the face, as the

* Dr. BERTHOLLE (*L'Union*, 65, 68, 70, 1866) describes cases of herpes of the soft palate appearing suddenly in perfect health with great pain on swallowing, and accompanied with severe pain in the head, accelerated pulse, and hot skin. On the first or second day, the pharynx and tonsils appeared much reddened and swollen, and the latter was covered with small yellowish specks of the size of a lentil; they are occasionally met with on the uvula or anterior pillars of the fauces, but are never seen on the posterior wall of the pharynx; even in the case published by MOTET (*L'Union*, p. 419, 1858), in which the eruption of herpes had extended over the whole isthmus faucium, over the cheeks and mucous membrane of the lips, and finally over the extremities, not a single vesicle was observed on the farther side of the isthmus faucium. As a general rule, the vesicles are not confluent; they leave flat ulcers behind them, which soon heal. The submaxillary glands are seldom painful or swollen, but there is often sensitiveness on the ascending portion of the submaxillary bone, corresponding to the region of the tonsils, which is increased on pressure, and sometimes extends to the ear; after a few days we find an eruption of herpes breaking out on the commissure of the lips and on the nose, which, as a rule, is the harbinger of a rapid decline of the disease and speedy recovery.

In females it is important to inquire concerning the state of the menstrual discharge. The affection is most frequent in them, especially with delayed menstruation, or some interruption of this function by various causes. The mucous membrane of the cavity of the mouth and soft palate is likewise sometimes affected with an acute diffuse inflammation which may run its course also with a vesicular eruption. These eruptions do not belong to herpes, but must be considered as aphthous inflammations and forms of ulceration.

forehead, eyelids, nose, and the nasal mucous membrane, ear, chin, and cheeks, nor need the eruption complicate febrile diseases, but may appear alone. There are, moreover, forms of herpes which appear on young persons, every year at a certain time, attended with febrile disturbance, and form groups of vesicles first on the extensor surfaces of the elbows and knees, which are followed after a few days by eruptions on other parts of the body, especially on the cheeks. This form of herpes is often mistaken for miliaria.

b. *Herpes præputialis* (*progenialis*).—Vesicles very frequently appear in groups on the genitals in men and women, which remain as such but a very short time, for the epithelium soon ruptures, softened by the high temperature. These places, stripped of epidermis, become irritated and inflamed by the sebaceous secretion abundant in such places in man, or by leucorrhœa in women, or simply from the contact of the two surfaces of skin, and they are subsequently covered with a yellowish purulent, even diphtheritic layer.

When these causes operate for some time, under certain conditions, and especially in men with contracted prepuce, the excoriated places assume completely the appearance of a venereal ulcer, and the diagnosis may be rendered more difficult by the fact that swelling of the inguinal glands is often present at the same time. In such cases a definite decision must be postponed. After the irritation has been removed, and that principally by the separation of the parts in contact, either by means of lint or by dusting them with starch, a few days will suffice for the differentiation. An ordinary herpes either disappears under this treatment, or commences to do so, while a specific ulcer will retain its former characters. In addition, the purulent secretion in a chancre is quite considerable, while the excoriations resulting from herpes secrete little or no pus. Inoculation with the secretion would at the first have been decisive as to the nature of the disease, but this as a rule is not allowed. When such herpetic eruptions have an inflammatory, indurated base, they may also be mistaken for the beginning of an indurated chancre; and the development of the hard, cartilaginous base of the true ulcer will give the first conclusive proof.

These eruptions of herpes appear on many persons at cer-

tain seasons of the year, and besides the annoyances mentioned they are unwelcome from the fact that they render infection much easier during impure connection.

c. *Herpes iris*.—This begins with a central papule, which is soon developed into a vesicle, and around which new groups of vesicles are formed. These may coalesce and form a large bulla, or the centre dries, while additions to the periphery continue, from which the exudation thrown out at various times assumes different hues, hence the name iris. The older vesicles will have purulent contents, the next younger sero-purulent, and the newest serous alone. It sometimes happens also that with a violent increase of the disease the old eruptions fuse together into a large blister, and thus the coloring disappears. The affection generally comes on the back of the hands and feet first, and then attacks the rest of the extremity, but commonly only the forearm and leg, while the body and face remain free. In severe cases the eruption is attended with febrile movement. The iris form of herpes appears chiefly in the spring and autumn. Many persons are repeatedly attacked by it, and the eruption vanishes after the space of eight to fourteen days, but sometimes lasts for weeks.

d. *Herpes circinatus* is only a different form of herpes iris, in which the disease spreads peripherally in the form of vesicles, while the process of drying has already taken place in the centre. The peripheral portion shows several rings of vesicles at the same time, and the livid redness around the circle leads one continually to expect new additions.

e. *Herpes zoster* [*Gürtelausschlag* ; *zona, ignis sacer, cingulum, shingles*.—L. D. B.]. This is an eruption of vesicles, appearing generally in clusters, which are distributed along the course of the cutaneous nerves, and more commonly appear on but one side of the body at once, seldom on both.*

The eruption is usually preceded by a feeling of pricking, stinging, itching, or burning, which lasts from twenty-four to forty-eight hours. This is the more considerable as the disease is more extended, and the process is deeper. The neuralgic

* BÄRENSPRUNG (die Gürtelkrankheit. *Charité Annal* IX., S. 44) saw a bilateral herpes zoster once, HEBRA and the author have seen them several times. THOMAS (*Arch. f. Heilkunde*, III. Heft, 1866) mentions three cases of duplex herpes zoster.

pains generally abate with the complete appearance of the vesicles, and return after the crusts have fallen off; they are more severe and persistent in those cases in which cicatrices remain. Some efflorescences abort, that is, the process proceeds no farther than to the formation of papules. The vesicles are at first small, but become the size of a lentil, and afterward larger; they may become confluent, so that the epidermis is elevated in large patches. Most of them have a central depression; their contents are transparent at the beginning and honey-like, but afterward become yellowish from pus, and even dark red from the admixture of blood. Some are surrounded by a red areola.

The following are the varieties, named after the various localities occupied by herpes zoster:

1. *Zoster pectoralis*; 2. *Z. abdominalis*; 3. *Z. femoralis*; 4. *Z. brachialis*; 5. *Z. facialis et frontalis*; 6. *Z. collaris*; 7. *Z. capillitii*; 8. *Z. perinealis*.

Their frequency on different places is likewise given in this arrangement. There is yet another form of herpes described, in which single vesicles appear scattered over the skin, so that, for example, one vesicle comes on the back, a second in the bend of the knee, and a third on the heel. This also runs its course with severe neuralgic pains.

1. *Zoster pectoralis* begins at the vertebral column, and extends along the ribs toward the sternum. Its appearance is preceded by severe pain, which may be mistaken for a commencing pleurisy.

The seats of pain are—1. A vertebral point, somewhat without the spinous process, at about the height of the exit of the nerves from the intervertebral foramen; 2. A lateral point in the centre, corresponding to the place of division of the intercostal nerves, where the nerves pass to the surface; 3. A sternal and epigastral point, which, in the superior intercostal nerves, is near the sternum between the cartilages of the ribs, and, in the inferior intercostal nerves, is in the superior epigastric region, somewhat outside of the middle line, corresponding to where the terminal branches of the intercostal nerves enter the skin (VALLEIS, *Deutsche Klinik.*, 1868).

2. *Zoster abdominalis* corresponds to the ramifications of the lumbar nerves, which supply the skin and muscles of this region; the eruption is bounded in front by the median line.

3. *Zoster femoralis* comes both on the anterior and on the posterior surface of the extremities, and may readily be mistaken for eczema or impetigo when the vesicles are confluent, or when the eruption has already dried up.

4. *Zoster brachialis* takes its origin between the fifth cervical and first dorsal vertebræ; the vesicles extend along the upper extremity on the flexor and extensor surfaces. Neuralgias frequently remain after its termination, and even paralysis of the affected extremity may result.

5. *Zoster facialis*.—The efflorescences come on the cheeks, nose, and along the course of the facial nerve.

6. *Zoster collaris (nuchæ)* begins in the region of the second and third cervical vertebræ, and reaches to the submaxillary bone, and on to the face and neck.

7. *Zoster capilliti*.—Eruptions of vesicles make their appearance along the track of the frontalis and supra-orbital nerves, vesicular eruptions occurring at the same time on the conjunctiva, with injection of the ciliary vessels, photophobia, and even iritis.

8. *Zoster perinealis*.—Along the course of the nervus pudendus vesicles are formed, following the perineal nerve on to the perinæum, the posterior wall of the scrotum, and even on to the penis.

Zoster ophthalmicus (according to BOWMAN, HUTCHINSON, and VERNON) is a peripheral neurosis in the ultimate ramifications of the sensory nerves, followed by a corresponding vascular alteration. With this we have redness of the connective tissue, photophobia, a central softening, and ulcers upon the cornea or iritis. When the nasal branch of the ophthalmic nerve is the seat of the affection, there are no eye-symptoms. Sometimes section of the supra-orbital nerve and infra-trochlearis is required, on account of the severe neuralgia resulting.

HUTCHINSON found the eye affected only when the eruption extended from the forehead to the nose. He observed also paralysis of the muscles of the eye supplied by the oculo-motorius.

Etiology and Course.—As stated, the efflorescences extend along the course of the cutaneous nerves. When only some of the ramifications of the nerve are implicated, the cause of the zoster may lie in a partial irritation of the spinal ganglia (THOMAS); in other cases groups of herpetic vesicles arise from the irritation of peripheral inflammation. Mechanical injury

is also given as a cause of herpes zoster. Concerning the relations of the eruption to the sensitive nerves, BÄRENSPRUNG * believes that the pain is solely in consequence of the cutaneous inflammation (?), with which hyperæsthesia and more rarely motor disturbances are associated.

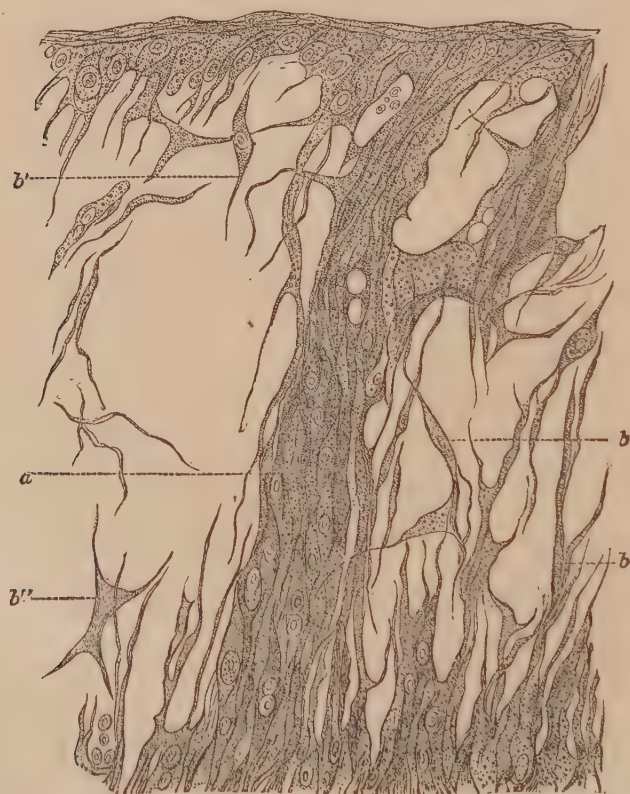
The process of desiccation takes place in the same order in which the eruption appeared, so that, after the spontaneous exfoliation, cicatrization is already complete. It is only when the pustules are irritated, whether by salves, plaster, or friction of the clothing, that we have an inflammation with profuse secretion of pus, occasioning great losses of substance, and correspondingly thick confluent crusts, which render the diagnosis difficult, and our most important sign then is its unilateral appearance, or its distribution along the cutaneous nerves. These are the cases which are very painful, and have a long course. The disease may come in young children (THOMAS noticed it for example in children from ten to fourteen months old), youth, and in old age, but is most frequent between the ages of twelve and twenty-four, and most rare in children; it is more frequent in males than females. The season of the year appears also to have some influence; at least the cases have come to us in greater number at certain times, while sometimes months have

* BÄRENSPRUNG asserts that the causes of zoster lie in the nerves, and indeed that the inflammation is communicated to the skin by means of the nerves themselves (see further, under Angioneuroses). "Physiological facts have long since placed it beyond doubt that the branches of the cerebro-spinal nerves, besides their sensitive and motor filaments, contain still a third class of fibres, which joins them from the sympathetic system, and these we must look upon as the proper media of the phenomena of nutrition. From every collection of ganglionic matter, these fibres pass into the nerve-bundle, and each particular ganglion appears to have its especial province, its proper organs, which it has to supply with nutritive nerves. Thus we are led to the posterior spinal nerves, whose root has a ganglion, and the ganglia spinalia give us the key for the explanation of the relative appearances under consideration. The neuralgia so frequently accompanying zoster is to be explained by the transmission of the irritation and reflex action from the ganglion upon the corresponding posterior root. Zoster, therefore, is a disease of the ganglionic system, more especially of the spinal ganglia, or the ganglion Casserii, although the peripheral irritation of a nerve which has ganglionic fibres may result in a limited eruption of zoster-vesicles, and we must grant even the possibility of a purely reflex affection of the ganglion. Zoster belongs to that class of diseases which frequently appear under the influence of a sudden change of weather, as angina and rheumatism."

passed without our seeing a single case. Erythema, purpura, and the diseases which have an annual type, often make their appearance at the same time with herpes.

Anatomy.—The formation of papules and vesicles takes place, according to BIESIADECKI, in the same manner as in eczema. If pustules are formed, the cellular elements within the papilla increase considerably, and penetrate the whole corium and a portion of the subcutaneous cellular tissue. The blood-vessels within are enlarged and loaded with blood. From the papillæ spindle-shaped cells press into the mucous layer, at the same time repeatedly dividing, so that the epithelial cells, crowded from one another by an abundance of round cells, are com-

FIG. 12.

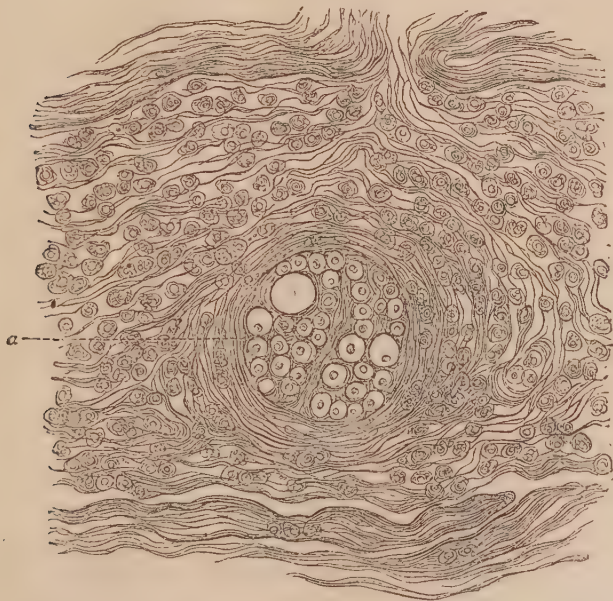


Vesicle of herpes zoster (after Haicht. *Sitzungsberichte der k. Akademie*, 1868).—*a*, Thick band formed of spindle-shaped epithelial cells; *b*, Shred composed of spindle-shaped cells *b'*, or of cells with several prolongations *b''*. (Magnified 450 diam.)

pressed, and form perpendicular bands running to the horny layer. Toward the middle of a pustule, a greater growth of cells takes place, and collections of pus are formed within the rete Malpighii, which are contained in a net-work consisting of the epithelial cells of the middle and upper mucous strata compressed into horny laminae. The epithelial cells of the deeper mucous layer participate in the process by dividing and becoming mother-cells with several nuclei, which lie upon the base of the pustule, and therefore upon the flattened and cell-infiltrated corium; sometimes, however, they also reach into the mesh-work.

The mesh-work which penetrates the pustule consists, therefore, of the isolated and compressed epithelial cells of the middle and upper layers of the rete Malpighii, and of the cells composing the sweat and sebaceous glands. Both take part in the formation of the central depression. The net-work (Fig. 12) is formed of the condensed spindle-shaped cells of the epidermis, and to a slight extent of those of the deepest

FIG. 13.



Section of a deep layer of the corium in herpes zoster; compact connective tissue.—a, Section of a nerve, with swollen nerve-fibres; the loose cellular tissue around the nerve packed with pus-cells.

layer of the rete Malpighii. An increase of cells is plainly found in and around the neurilemma in herpes zoster, just as a similar growth has been seen around the nerve-trunks in neuroma and carcinoma. (See Fig. 13, taken from a preparation by Dr. HAIGHT, of America; at *a* is seen the accumulation of cells about the nerve-trunk.)

HAIGHT further found the nerves swollen, the medullary substance softened, and the axis cylinder eccentrically enlarged.

Therapeutics.—In all forms of herpes any expectant method of treatment, by which the vesicles are preserved as much as possible, is the most appropriate. In herpes zoster, the friction of the clothes, which leads to the destruction of the vesicles, should be prevented by an appropriate bandage, and the spontaneous drying is assisted by dusting the parts with starch. This precaution is important, for the reason that irritating measures which destroy the vesicles, and leave the corium bare, thereby prevent the formation of a new cuticle, and induce the formation of scars, which are frequently the cause of the most severe neuralgias, probably by irritation of the peripheries of the nerves. Painting the part with collodium, and poultices with ol. hyoseyami, often give comfort. The emplastrum diachylon, half an ounce, with a drachm of the ext. opii aquosi, or pulv. opii puri, is of service for the pain. The whole quantity should be spread upon linen or kid, and applied over the painful parts, and left on them either until the pain ceases, or until the artificial eczema frequently caused by it demands its removal. When this does not suffice, nor the friction with ext. belladon. (one part to six of ointment), we have an excellent means of removing the pain in the subcutaneous injection of morphine:

| | | |
|----------------------------------|-------|----------|
| R. Morph. muriat. | . . . | gr. x. |
| Aq. destillat. | . . . | 3 ij. M. |
| 5 to 10 drops to the injection.* | | |

In some cases natural baths are of service.†

[* MAGENDIE'S solution is more frequently used; this is, gr. xvj, ad. ℥ j, of which five to ten minims suffice for an injection—the German formula being two and a half times this strength; i. e., gr. xl ad. ℥ j.—L. D. B.]

† E. FENGER (Copenhagen) publishes his own experience and that of others in

The above-mentioned expectant treatment is also to be employed in the other forms of herpes, particularly the dusting with starch, cold lotions, and the separation of the contiguous surfaces by lint and linen.

[HARDY and BAZIN proscribe all moist applications in the early stages of herpes zoster or shingles, and order a simple powder of starch or lyco-podium; HARDY and CAZENAVE oil the surface first. TILBURY FOX, on the contrary, generally uses a lotion of oxide of zinc and acetate of lead with glycerine (zinci oxid. ʒ ij, glycerine ʒ ij, liq. plumb. ʒ iss, aq. calcis ad. ʒ vj to ʒ viij) locally, and covers the patch with a layer of amadou (tinder), or two or three layers of lint; he also recommends the following: *R.* Powdered maize ʒ j, zinci oxid. pulv. ʒ j, calamine pulv. ʒ ss. *M.* WILSON uses the oxide-of-zinc ointment, or a thin paste of precipitated chalk. SQUIRE advises the application of almond or olive oil, and dredging it over lightly with starch-powder. The itching and burning pain of zona often calls for more than a simple starch-powder. I have found much relief experienced from keeping the part dusted with the following:

| | | |
|-------------------------|---------|----------------------------|
| <i>R.</i> Morph. sulph. | | grs. ij. |
| Camphor | | ʒ ss ad. ʒ j. |
| Alcohol | | q. s. |
| Zinci oxidi | | ʒ ij. |
| Pulv. amyli. | | ʒ j. <i>M.</i> , ft. pulv. |

For the subsequent neuralgic pains, we may use a liniment containing aconite, chloroform, etc., such as: *R.* Tinct. aconit. rad., tinct. opii, chloroformi, aa ʒ ss, linament. saponis ad. ʒ vj. *M.*, ft. lin. A large number of cases of zona require constitutional treatment in the way of tonics, and about the most serviceable is the citrate of iron and quinine given in large doses, grs. iv to x three times a day. This often suffices to cure the neuralgia remaining, and, when this fails, arsenic in combination with iron should be tried. Quinine injected hypodermically, with morphine, sometimes cures the obstinate neuralgic pains left by shingles.—L. D. B.]

2. MILIARIA.

Syn. *Sudamina*, *Friesel*, NEUMANN; *Miliary Eruption*, *Hydroa*.—L. D. B.

By miliaria we understand, in general, little vesicular-like efflorescences, which are surrounded by a small, red halo, re-

the abortive treatment of zoster by collodion. The vesicles sink without exception during the first twenty-four hours, and the redness and heat of the skin diminish; but the pain does not disappear in all cases. The application of collodion prevents the eruption of new vesicles (?). Ulcerous or gangrenous action is not produced by the remedy.

BÄRENSPRUNG recommends ointments of cerate or glycerine, lukewarm cataplasms, and, for the neuralgia, vesicants.

main isolated, and dry to pale-yellow, scale-like crusts, soon after their contents have become purulent.

Three forms of miliaria are described :

1. *Miliaria Rubra*.—These are papules or vesicles of the size of the head of a pin, which contain only serum at their apex, and are reddened at their base.

2. *Miliaria Alba*.—The epidermis is macerated, whereby the vesicles show a milky, opaque (purulent) fluid.

3. *Miliaria crystallina*, where the contents of the vesicles are almost transparent, like tears.

The latter form alone, which appears in connection with the febrile diseases, as puerperal fever, typhus, acute rheumatism, etc., as also in marasmic and anæmic children, and in the course of angina, can be described as true miliaria ; while the two first, that is, miliaria rubra and miliaria alba, are to be considered as sudamina (HEBRA).

Sudamina are produced by high grades of temperature, which cause a profuse secretion of sweat, and, with this, distention of the sweat-tubes. In the warm summer months, or after the forced use of steam-baths, and also in corpulent persons who sweat a great deal, we frequently find it spread over the whole surface of the body. In persons with a delicate skin, especially children, who have had warm fomentations applied for some disease, as pneumonia, the form of miliaria alba is frequently so strongly developed that the single efflorescences become confluent, and the epidermis is raised by pus in places the size of a silver dollar. The fluid in the vesicles is odorless, has a neutral or faintly alkaline reaction, and chemical analysis shows the presence of chloride of ammonium.

Some authors assert that an inflammatory exudation takes place between the epidermis and the cutis ; others that it consists alone in an accumulation of sweat in the distended ducts ; and still others, that a collection of sweat takes place between the lamellæ of the epidermis ; the latter view alone seems to me the right one, and has been lately confirmed by Dr. HAIGHT.

It appears from what has been said, that miliaria is not an independent disease of itself, as has been stated in so many works, and has even been said to have appeared in epidemics ; quite

as little is the "*migliaria*," so frequent in Italy, to be considered an independent disease. They are only eruptions on the skin accompanying those febrile diseases which are attended with profuse sweating; or they are called forth by the too thick covering of the body. The term sudamina is applicable to all the affections given under the name miliaria; on the other hand, the cutaneous affection accompanying typhoid and puerperal fever, etc., is also called miliaria by HEBRA. In typhoid fever, miliaria appear on the body and extremities; in puerperal fever, on the abdomen and thighs, and frequently on the breast and neck; likewise in acute rheumatism, scarlet fever, and small-pox. The miliary efflorescences also occur not unfrequently in consequence of pyæmic processes; but here we have to do with a disease *sui generis*.

I have had three cases in children, where, after a febrile prodromal stage of two days, vesicular eruptions appeared on the face, extensor surfaces of the extremities, and also scattered over the body. At the same time there were swelling and redness of the mucous membrane of the soft palate, pharynx, and tonsils. After lasting four or five days, during which time the fever subsided, the vesicles dried, and a superficial desquamation of the skin followed in those places where they had been. In all three cases relapses occurred within several months or a year. The redness preceding the eruption of the vesicles might lead to the diagnosis of scarlet fever, if occurring at the time of epidemics of the same.

The treatment of sudamina is wholly local, a moderate temperature and dusting the surfaces with amylum sufficing to cause the eruption to disappear. In many cases a general eczema is subsequently developed, which will be more fully treated of under the head of Eczema. The miliaria crystallina, as a symptomatic affection, needs no especial local treatment.

3. ECZEMA.

Syn. *Nässende Flechte*, NEUMANN; *Crusta Lactea*, *Scabies Humida*, *Herpes Squamosus Madidans*, *Humid Tetter* or *Scall*.—L. D. B.

By eczema we understand a disease of the skin, which appears at its commencement in the form of vesicles,* papules, or pustules, is accompanied with a more or less severe collateral œdema, and, in the further course of which, crusts, scales, or

* Eczema appears most frequently in this form.

infiltrations are formed, beneath which former a reddened, moist, or dry surface is seen. All its forms are accompanied with severe itching.

The varieties of eczema are named from the leading forms of the eruption: eczema papulosum; e. vesiculosum; e. pustulosum; e. rubrum; e. impetiginosum; e. squamosum—the former being the earlier stages, the latter belonging to the subsequent.* The designations used by various authors, as tinea, porrigo, crusta lactea or serpiginosa, serpigo, impetigo, etc., represent only the different changes in the form of eczema, especially according to its stage and location.

Eczema may be *acute* or *chronic*. Acute eczema is most common on the face, genitals, hands, and feet; sometimes, however, it attacks the whole surface. The eruption is usually preceded by a chilly feeling along the back, or even other febrile phenomena, after which the eczematous places become swollen, reddened, and covered with vesicles, which subsequently burst, and pour out a gummy, adhesive fluid. This dries to crusts, after whose removal the subjacent skin appears moist, and then becomes dry and red, with white scales (*pityriasis rubra*). In acute eczema of the face, for example, that part is swollen and reddened, the eyelids are cedematous, and there is, in general, more exudation in the deeper parts of the skin than in the superficial. The skin, therefore, frequently appears thickened and uneven, as from swollen glands, without being covered with many vesicles or papules. The same appearances are found in eczema on the privates (penis or scrotum), but with the difference, that the prepuce is, as a rule, cedematous, and the scrotum, on the contrary, moist. Vesicles, papules, and pustules, likewise appear in acute eczema on the hands and feet.

Acute general eczema has also different forms, each according to the various locations, yet the formation of vesicles and papules is the prevailing one.

Far more frequent than the acute is the chronic eczema; and, since almost every portion of the surface of the body may

* TILBURY FOX (the *Lancet*, 1868, II., 21, 22) disputes this division. He considers eczema as analogous to catarrhal inflammation of the mucous membranes, regarding lichen as a plastic impetigo, and ecthyma as a pustular inflammation.

be attacked by it, we will speak of their appearance in order; yet, to their right understanding, we will define more accurately the mode of origin of the different forms. As already stated, eczema may begin with papules, although it most frequently has first the form of vesicles. The papules dry into scales and crusts, or develop into vesicles; the vesicles rupture and pour out an adherent, gummy fluid, which dries very rapidly in the air, and forms crusts, beneath which, in the beginning of the disease, we find the skin reddened, swollen, and moist, and, later on, dry and covered with scales. In another form of eczema the exudation does not take place on the surface, but in the lower part of the skin, and œdematous swelling is the result.

Eczema of the head.—*Eczema capitis* (tinea capitis mucosa, achorosa, lymphatica) appears generally in the form of eczema rubrum and impetiginosum. The hairy scalp is, as is known, the seat of numerous and large sebaceous glands, and when their secretion is mingled with the eczematous exudation, we have, instead of a gum-like fluid, a yellowish one, which, in uncleanly persons with great growth of hair, decomposes, and collects dust and germs of vegetable and animal parasites, which find here a suitable soil for their further development. The hairs become matted together, and there is formed what is known as *plica polonica*; but, in persons who are cleanly, and remove the exudation, the process gradually subsides, crusts are formed, and finally exfoliated. Eczema on the hairy scalp extends also to the surrounding parts, as upon the forehead and ears, and thence to the auditory canal and neck. This peculiarity of eczema may assist us in making the diagnosis between eczema and seborrhœa, psoriasis, favus, and syphilis. In acute eczema of the scalp the cervical glands enlarge, but seldom suppurate, and that only in children, when irritating remedies have been used for the cure of the eczema.

Eczema of the ears occurs either as an extension of it from the head, or spontaneously. Both ears are generally attacked, the lobe of the ear being the point of selection. Thence the eczema extends to the *external auditory canal*, whose calibre is thereby diminished, and the patient rendered deaf, or partially so. This difficulty of hearing may last very long, even for

years, especially in those cases in which pachyderma has developed. Painful rhagadæ are formed behind the ear.

Eczema on the face—Eczema faciei (Porrigo larvalis, crusta lactea, mellitagra flavescens).—Either the whole face is affected, or only a portion of it, as the forehead, eyelids, nose, lips, chin, and the hairy parts.

Eczema rarely appears on the *forehead* alone, except from a local injury, as from the pressure of the covering of the head, the disease being most usually continued from the scalp or cheeks. *Eczema on the eyelids* appears either in the form of a dry œdematous infiltration, or as excoriated, moist vesicles, at the same time with œdematous swelling and redness of the conjunctiva (*conjunctivitis*). Eczemas frequently come *on the nose*, especially on the place of transition of the integument into the mucous membrane, at the corners of the nose and on its alæ, and extend on to the mucous membrane. The size of the nose is thereby considerably increased, its surface reddened, and the circulation of air hindered. Eczema occurs spontaneously on the nasal mucous membrane, giving rise to crusts, which sometimes adhere for years, and may occasion annual returns of erysipelas of the face, and also chronic œdema of the eyelids. Eczema frequently comes on the *upper and lower lips* in the form of eczema rubrum, impetiginosum, and squamosum, and then involves the mucous membrane of the lips, which are covered with crusts, and frequently have deep rhagadæ. The size of the lip, especially the upper lip, is four or five times enlarged, while the outer integument may still appear normal. This is very obstinate, on account of the continual movement of the part, and the difficulty of applying remedies to it.

Eczema of the hairy parts of the face (eczema barbæ) is a very frequent and intractable disease. The affected part is reddened, swollen, moist, or covered with crusts when the disease is somewhat more advanced; or, finally, there are small flat pustules corresponding to the place of exit of each hair. If we extract the hairs, we find their roots tumefied, loosened, and saturated with pus. We have here, therefore, quite the same appearances as in *sycosis*, from which this form of eczema is distinguished only by the fact that the former is without exception confined to the hairy parts, while eczema extends also

on to the cheeks and neck. Eczema on the chin, throat, and neck, presents little that is peculiar, and seldom appears without a coincident affection of the rest of the skin.

Eczema of the nipples, as a rule, takes the form of eczema rubrum and impetiginosum. Both nipples are usually attacked. They are then swollen, reddened, and stripped of their epidermis. The disease, which occurs mostly in primiparæ who nurse their own children, is one of the most obstinate and painful of all cutaneous affections. With each application of the child to the breast, the otherwise inflamed nipples are irritated and the swelling thereby increased; and cases are not rare in which a suppurative mastitis comes on, which may demand the withdrawal of the infant, and also greatly prolong the disease. This form of eczema can arise without the exciting cause of suckling, and that not only in women, but also in men; it takes the form of eczema impetiginosum, in which the nipple is the centre of an eczematous patch.

Eczema of the navel comes likewise as eczema rubrum. The navel is thereby swollen, red, and moist, as are also its surrounding parts.

Eczema of the genitals.—This is very frequent in the male, either on the penis alone, or scrotum, or on both together, the most common form being eczema rubrum and impetiginosum. The penis is hereby increased in its length and breadth, mostly by œdematous swelling of the prepuce, which may cause a more or less severe phimosis or para-phimosis. Occasionally eczema of the penis becomes chronic, and induces elephantiasis of the prepuce. When eczema occurs on the scrotum it swells, becomes moist over its whole surface, and the furrows and lines deepen; if the disease lasts for a long time, thickening of the whole skin of the scrotum takes place, and may lead to elephantiasis scroti. Eczema on the genitals is one of the most annoying forms, on account of the intolerable itching and obstinacy.

Eczema on the female genitals.—This generally commences on the labia majora, as eczema rubrum. The eczema spreads either forward and upward, or downward to the inner surface of the thigh, and backward toward the perinæum and anus, at

times also internally to the labia minora, and even to the mucous membrane of the vagina. The itching in these places is intense. The disease occurs principally in well-nourished corpulent persons.

Eczema of the Perinæum and Anus.—The perinæum and the skin around the anus are frequently the seat of obstinate eczema, produced by the irritation from friction of the two surfaces of the nates, which even in the normal condition secrete much sweat, and, when the disease is neglected, gradual infiltration of the skin occurs. In consequence of this, the folds around the anus become considerably thickened, and painful rhagadæ are formed, which are chafed and irritated at each movement of the bowels. This eczema spreads also to the mucous membrane of the anus, by which the itching is considerably increased. In both children and adults, but more commonly in the former, the contact and friction of two contiguous surfaces produce at first only hyperæmia and stasis, but, when the irritation exists for a longer time, it goes on to inflammation with infiltration; and, if the skin is delicate, ulcers are formed, and even gangrene may follow. This occurs in children in the fossa supra clavicularis, in the fold between the shoulder and neck, more frequently in the inguinal region around the anus and genitals, as also along the whole internal surface of both lower extremities, particularly in infants who have been tightly swaddled for a long time. While ulcers and gangrene are more common in ill-nourished children, the erythematous and eczematous form of the disease is found in those who are well-nourished. The same conditions are also seen in adults in the axillæ, and on the abdomen in the so-called pot-belly, also on the privates and around the anus.

ECZEMA MARGINATUM.—From the continual contact of the scrotum with the inner surface of the thigh, we find developed on the thigh, corresponding to the area of contact, hyperæmia, and afterward inflammation with desquamation, and subsequently infiltration. The eczema does not remain confined to this location alone, but extends circumferentially in the form of papules and vesicles, while it heals in the centre; this taking place both outward on to the surface of the thigh, and also upward toward the abdomen, and backward to the

anus. As may be imagined, the scrotum does not remain unaffected. Another form of the extension of eczema marginatum is, by the formation of isolated circles, bounded peripherally by small papules, which enlarge and become confluent, and, by the disappearance of the intervening portions, serpentine lines are left which enclose a dark skin stained with pigment. KÖBNER was the first to maintain that this disease was dependent on a parasite, which was contagious, and resembled the trichophyton tonsurans. My investigations agree with those of KÖBNER: in some cases I also have been able to demonstrate the presence of a parasite resembling that in herpes tonsurans. It is not so easy to demonstrate the presence of the fungus when there is great infiltration, with the formation of papules, probably because in such cases the parasite is already dead. We will speak more particularly of this disease when we come to treat of the parasitic affections.

Eczema of the Extremities.—Obstinate eczemas, mostly eczema rubrum and squamosum, occur on the flexures of the joints, especially of the knee, in children, and also in adults, and the frequent movements of the part give rise to painful rhagadæ, the skin becoming thick and infiltrated. Both popliteal spaces are usually affected.

Eczema of the legs comes mostly as eczema vesiculosum and rubrum (*fluxus salinus*), with all the later forms of eczema; both legs are affected to an equal degree, which symmetrical appearance of eczema can often be observed elsewhere on the body. The disease is usually occasioned by varicose veins, but not seldom appears spontaneously.

Eczema of the feet affects commonly the dorsal surface, caused by pressure and friction of the coverings worn.

Eczema of the Hands.—The hands are very frequently the seat of the most varied forms of eczema, acute as well as chronic. The many irritating substances with which they come in contact, together with diseases of internal organs, are the reasons of its frequent appearance on this place. The disease is prolonged greatly by the movements of the fingers, much thickening of the skin and deep cracks follow, which allow of movement only with great pain, and finally produce stiffness of the fingers. The obstinacy of such eczemas depends

partly on the fact that the thick epidermis prevents the eruption of vesicles, and the disease runs its course more in the form of subacute inflammatory action. Eczema is also frequently found on the fore and upper arm, where it is mostly of traumatic origin.

Etiology.—Eczemas are in part *idiopathic* and in part *symptomatic* affections. The idiopathic result from immediate irritation of the skin; as by the operation of acrid medicated salves, water, and oils, by the continued action of a high or low temperature, and by mechanical injuries affecting the skin directly. Frictions with ung. antimonii, oleum crotonis, daphne mezereum, ung. hydrargyri, sulphur, iodine, and alkaline soaps, are frequent causes of eczema. Purely mechanical causes are, any thing which irritates the skin, especially the finger-nails, which alone can create an eczema by scratching; therefore we frequently find eczema accompanying the pruriginous diseases, scabies, prurigo, and also with the presence of body-lice. Under this head belong the eczemas caused by pressure of clothing, trusses, belts, corsets, hats, coverings of the feet, etc. It is very difficult to determine the limits of temperature necessary to produce eczema. In general, it may be said, persons with tender skin, poor in pigment, are more readily attacked by eczema than those with abundant pigment. *Universal eczema* very frequently is caused by the severe action of the skin, or sometimes by steam-baths, sudamina *being first* formed, which, when the cause operates long and repeatedly, may readily develop into a universal eczema.

The causes of *symptomatic eczema* are far less understood than those of the former variety, and we only know that they do sometimes come in consequence of internal diseases. To this class belongs the eczema coming from dyspepsia; this mostly occurs on the face and hands, and like the form arising from menstrual disturbances is very intractable, especially from its repeated returns. The eczemas which are found in chlorotic girls likewise do not disappear until after the removal of the cause. The connection between *rachitis* and *scrofulosis* and eczema is, as a rule, over-estimated. Statistics which I made gave among 308 eczematous children only 30 rachitic and 70 scrofulous; there are therefore in 100 eczematous children but

9.7 rachitic and 22.7 scrofulous. On the other hand, I had an opportunity of observing more than 3,000 scrofulous and rachitic children, in whom there was no eczema. The relation of the two constitutional affections to eczema is therefore by no means so proportionally great. On the other hand, a purely local treatment causes eczema to disappear, even when the constitutional diseases mentioned still continue. As is evident, a small fraction of the eczemas happen upon scrofulo-rachitic children, while the majority, on the contrary, appear independently of any constitutional affection. The other causes of eczema given by other authors, as temperament and various dyscrasie, are by no means proved, and we prefer to acknowledge that numerous cases occur whose origin remains completely unexplained. Eczema is not contagious, but eczema with a profuse secretion is sometimes communicated to those parts with which it comes in immediate contact (for example, eczema on the buttocks of a child may be communicated to the forearm of the nurse who carries it). The hereditary character of eczema, as asserted by VEIEL, according to my experience, amounts simply to the fact that certain families are especially liable to eczema, which in them shows great tendency to relapse.*

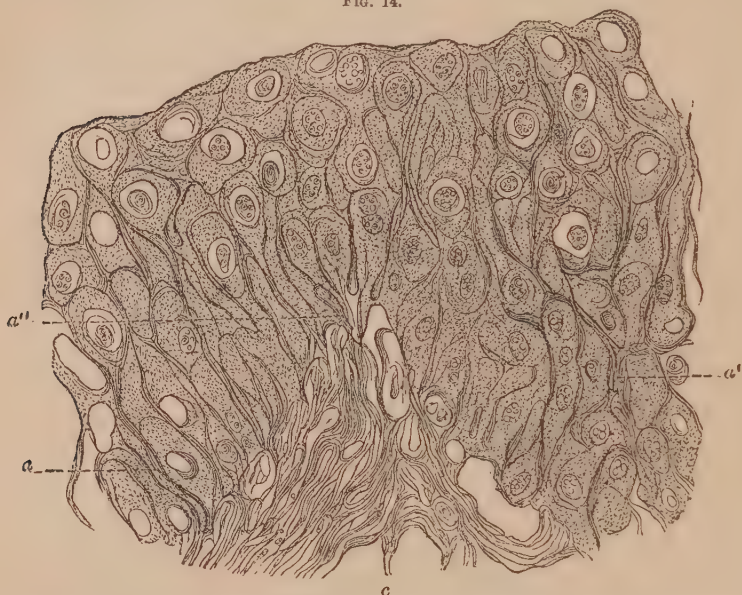
Anatomy.—The various stages of eczema are developed on the skin of animals after friction with Croton-oil in a manner similar to those on the human skin. For the purpose of study, I chose the ears of rabbits. This in the living animal I rubbed with the oil for ten or fifteen minutes, placed under a working microscope, and watched the result for several hours, as far as it was possible with so weak a power (PLÖSSL's working microscope).

The most striking phenomena were, at first a rhythmical contraction of the vessels, which at one moment appeared empty of blood, at the next distended, and which afterward dilated; this continued until the stasis became permanent; the ear, which in the natural state was transparent, then became opaque, swollen, hot, and, after a few hours, numerous vesicles appeared with serous contents. After forty-eight hours, the animal was killed, and the tissue was found infiltrated with a

[* Dr. POOR, in Pesth (*Prager Vierteljahrschrift*, 1864), makes some assertions as to the identity of eczema and malarial disease, which NEUMANN afterward disproves.—L. D. B.]

serous fluid, and filled with a great quantity of cells. I have never followed the process any further on animals.

FIG. 14.



Eczema papule.—*a*, Spindle-shaped cells which permeate the mucous layer abundantly (BIESIADECKI); *a'*, with several nuclei; *a''*, The same with one-half yet in the corium; *c*, Papilla.

BIESIADECKI (*Sitzungsberichte der k. Akad., Wien*, 1867) describes the formation of papules and vesicles as follows: The papillæ of circumscribed portions are enlarged in breadth and length, and that by infiltration with cells and a serous fluid. The connective-tissue corpuscles of the papillæ are remarkable for their size and richness in fluid, and are also increased in number. Numerous spindle-shaped cells are prolonged into the mucous layer, lying half in the papillæ and half between the deepest cells of the rete Malpighii (Fig. 14, *a''*). They crowd the cells apart, and reach even to the epidermal layer. Within the mucous layer they often form a dense net-work, penetrating it in different directions. Within this net-work lie the somewhat swollen epithelial cells, whose protoplasm appears somewhat granular. This circumscribed infiltration of the papillæ forms the eczematous papule.

If the new formation of cells within the papilla increases,

the superficial cells of the mucous layer swell up and rupture, the epidermis over it is elevated, and a vesicle is formed. The spindle-cells are present here in yet greater abundance, and serve as nutrient canals, and perhaps convey the elements of nutrition to the mucous layer. In acutely-developed eczema they are present very soon in great numbers, and form a dense net-work. With the greater abundance of these cells there is also larger quantity of the fluid in the tissue of the papillæ, and this is sometimes so copious as to elevate the epidermis in the form of a bleb. When the epidermis is removed, the fluid oozes out (moist eczema). We thus see in what manner the exudation formed in the papilla makes its way through the mucous layer to the surface.*

The anatomical changes vary according to the duration of the eczema. The gummy fluid exuded cannot be distinguished microscopically from ordinary serum. In acute eczema the follicles, papillary layer, and superficial strata of the corium, are swollen, but this swelling subsides again in most cases. If,

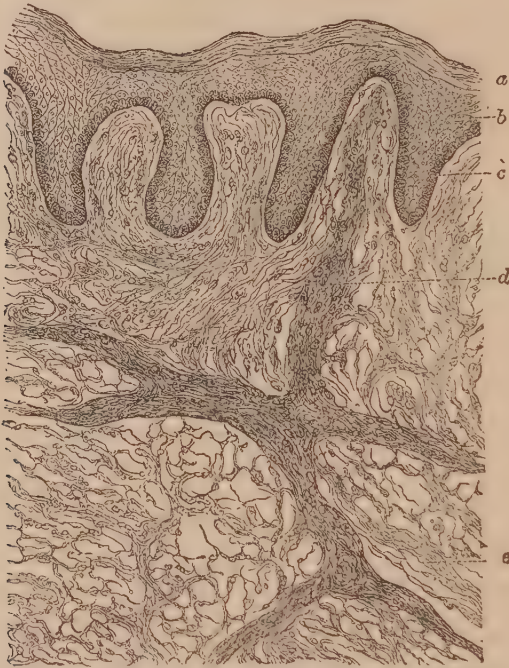
* The question whence the proliferation proceeds has been answered experimentally, especially by COHNHEIM and RECKLINGHAUSEN. The former was able on the mesentery of the living frog to see the blood-cells making their exit through the walls of the vessels, and considered that the greater part of the cellular hyperplasia consisted therefore of migrated white blood-corpuscles. On the other hand, RECKLINGHAUSEN has proved that, in an exsected cornea, kept alive for twenty-four hours by carbonic acid and moisture, the cells still increase (accordingly, they must do so without blood-vessels); the cellular growth mentioned may therefore take place from other tissue-elements as well. The spindle-shaped cells, which BIESLADECKI first discovered in the rete mucosum of the normal skin, and which the same author found increased in the acuminate condylomata, acute eczema, and herpes zoster, and which are distinguished from the epithelial cells of the skin by their spindle, stellate, or irregular form, their small size, and their shining appearance, PAGENSTECHER proves (*Akad. der Wissensch.*, 1868) to be increased in all processes in which there is an increase of epidermal formation (cicatrization, psoriasis, chronic eczema, and hypertrophied skin around ulcerated epithelioma).

These cells make their way from the corium into the stratum mucosum by their own independent movements; for we find in the processes mentioned quite the same structures in both places, and in some cases both are tinged with hæmatine. The migrating cells do not perish in the rete Malpighii, nor do they form pus; neither do they proceed any further; so the writer draws his last and important conclusion that, since a positive proof of the division of the epithelial cells fails, and he himself can demonstrate transition forms from these ambulant to epithelial cells, it follows therefore that the migrating cells become epithelial cells. Later investigations by OSER have, indeed, placed beyond doubt an endogenous formation within the epithelial cells.

however, the eczema becomes chronic, the skin is considerably thickened, the lines and furrows become deeper, and the papillæ are enlarged to such an extent that they are visible to the naked eye.

The older the eczema, the larger the papillæ become, and the greater is the cell-infiltration of the corium, which sometimes extends to its deepest layers (Fig. 15), and even into the

FIG. 15.



Section of infiltrated skin from a chronic eczema.—*a*, Epidermis; *b*, Rete Malpighii; *c*, Pigmented cells and enlarged papillæ; *d*, Cellular hyperplasia around the vessels; *e*, Diffuse cell-infiltration.

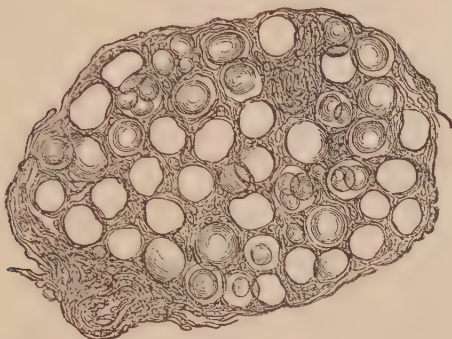
panniculus adiposus, so that there is increased cellular growth around the capillaries and between the single fat-cells (Fig. 16).

Prognosis.—Eczema belongs to the curable diseases, although relapses occur in many cases. It sometimes returns once or twice in the course of a year; occasionally, however, several times every year; this is especially the case in symptomatic eczema.

The longer the eczema has lasted, the easier is its treat-

ment, as we have in this case more the product of the disease than the morbid process itself to combat. Further, eczemas are variously rebellious according to the localities they occupy; thus, for example, eczema on the hairy parts and on the hands

FIG. 16



Cell-infiltration around the single fat-cells of the panniculus adiposus in chronic eczema.

is more difficult to cure than eczema on the arm, thigh, or lower leg; quite as hard to remove is eczema affecting the lips and eyelids. Eczema depending on the occupation of the individual, as in workers at the fire, and washer-women, will always return when the same causes again act on the skin. Such patients must suspend their occupation until new and thick epidermal masses have been formed.

Treatment.—The different views in regard to treatment have varied according to the opinions entertained as to the cause of eczema. Local treatment was for a long time repudiated, and most of all in the eczema of children, because it was asserted that hydrocephalus, meningitis, pleuritic exudation, bronchitis, etc., resulted from the removal of this beneficial source of excretion. We have, however, had an opportunity of observing a great number of children, and we have never experienced such evil results, although we have always treated eczema locally.

The proportion of these diseases, hydrocephalus, meningitis, and croup, to eczema is so exceedingly small, that in a total of 13,000 sick children we saw but ten hydrocephalic and ten croupous.

On the contrary we knew children, who, by the many sleepless nights and the constant drain of the exudation, had become reduced, to improve after the removal of the eczema, and to increase markedly in their weight. We do not, therefore, fear curing an eczema, and make no use of internal remedies, except in those cases where the connection with diseases of the internal organs is clear.

Neither antimony, mercury, iodide of potassium, abstraction of blood, nor cathartics, are used by us. On the contrary, in chlorosis, we exhibit the preparations of iron; in reduced patients we improve the nutrition, and in cases where the eczema has a distinct type, as where an attack of fever accompanies an eruption of vesicles, we employ quinine; in obstinate cases we give also arsenic, or carbolic acid, internally. Where there are excoriations or ulcers on the cervix uteri, or when there is fluor albus present, these also are treated.

When continuance in close rooms produces relapses, attention is paid to appropriate exercise in the fresh air; when affections of the stomach excite the eczema, the mineral waters are sometimes indicated, as Karlsbad, Marienbad, etc.; and in anæmic persons and those suffering from sexual derangements, the ferruginous springs, as Franzensbad, Pyrawarth, Pyrmont, and so on, are of service.

WILSON, who considers the cause of eczema in infants to be a faulty assimilation of abnormal mother's milk, which after a while affects the whole nourishment of the child, proposes the following ends to be accomplished: elimination of the morbid elements, restoration of the strength, and removal of the local affection. To fulfil the first condition he uses calomel, which unloads the intestinal canal, and he covers the affected parts with zinc-ointment. To improve the condition of the blood, arsenic is given, and preparations of iron to those who are anæmic:

R. Liq. potass. arsenit., gtt. xxxij.
 Vini ferri,
 Syr. tolutan., aa, ℥ ss.
 Aq. anethi, ℥ i.

M. Dose a teaspoonful—three times daily, after eating.

The *local treatment* is far more important than the internal, and HEBRA has rendered the great service of having first carried this out rationally.

It embraces the following remedies: 1. *Water*, employed

either for its temperature, or its property of holding various substances in solution. Warm water is seldom used in eczema, except in the form of baths, either with tar, soda (a pound to the bath), or corrosive sublimate. Cold water, on the other hand, is applied in water-dressings, douches, or the so-called Priessnitz's cold water-cure. Water, when used in fomentations, especially in acute eczemas, should be soft, either river, rain, or distilled water. Hard water holds, as is known, salts in solution, which to an irritable skin frequently do more harm than good. If, however, only hard water can be obtained, it can be freed of its salts by boiling and allowing it to cool. Water, when employed in the form of a douche, or shower, must not be allowed to fall more than two feet upon the affected part; for violent douches can produce dermatitis and furuncle. Water serves as an excipient of various astringents, such as alum, acetate of zinc, sulphate of copper, caustic potash, and corrosive sublimate; the strength must vary according to the effect desired, generally one to three grains to the ounce suffices. These solutions are used in acute eczema in conjunction with cold-water dressings, a single strip of linen being dipped in the former and covered with the water-dressing. The cold-water cure is suited only to acute general eczema. When circumstances do not permit of a sojourn in a water-cure, this method can be arranged in any private house in the following manner: A large piece of rubber cloth is placed directly upon a mattress, upon this two sheets folded into bands are laid crosswise, over these one or two blankets are spread, and then two wet sheets, and a urinal, which rests between the thighs of the patient. The upper sheet serves for the body and upper extremities, and the lower one for the lower extremities. A douche apparatus is brought very near to the bed. After the patient has taken a shower-bath, he is enveloped in the sheets; around these the two blankets are firmly bound to the patient by means of the sheets folded into bands, and over all more covering can be laid if required. Soon after envelopment the patient experiences an agreeable feeling of warmth, falls into a gentle perspiration, and the itching and burning subside considerably. This manipulation is gone through with at least four times in the twenty-four hours. The chamber should be moderately

warm, and the patient should take some exercise after the douche, before being placed in bed.

Water is also employed as a menstruum in very strong solutions, especially of caustic potash, as in the formula :

R. Potass. caustic.,
Aqua destillat., āā partes equales. M.

This is applied at least three times in a week, and should be rubbed into the skin with lint, and the potash washed off with lukewarm water immediately after the application. The pain caused by this is great, but is lessened by cold-water dressings, and vanishes completely after a quarter of an hour. Even when an eczema has lasted for years, it will yield to this remedy, and vesicles, which sometimes, notwithstanding their small number, have been accompanied with the most severe itching, are completely destroyed as soon as the caustic solution comes in contact with them, and the itching is thereby entirely dissipated. No use is made of other caustics in eczema, as nitrate of silver, or the concentrated acids, sulphuric, nitric, and chromic ; but I do employ corrosive sublimate, with collodium (hydrarg. sublim. corrosiv. ʒj, ætheris sulph. ʒij, collodii ʒss) and the concentrated solution of potash, with good success in obstinate cases ; the layer of collodium remaining on the cauterized portion prevents the access of air, and diminishes the burning caused by the cauterization. This solution, like the potash, is applied by means of a swab of lint ; no pain is experienced during its application, but is pretty severe half an hour afterward.

Oily matters are of service for the purpose of removing the crusts in eczema, and of preventing the access of the air, thus hindering the newly-exuded masses from drying, and often alone sufficing to cure eczemas in which the skin is not greatly infiltrated. Those most commonly used are : cod-liver oil, almond, linseed, and olive oils, yolk of eggs, unguent. simplex, spermaceti with enough olive-oil to make a soft ointment, crème céleste, cold cream and axung. porci ; in their application the largest quantity possible must be brought into contact with the skin.

Various astringents may be combined with these oleaginous substances, as the zinci oxidum, plumbi carb., or plumbi acetat.,

and hydrarg. precipitat. alb., each in the strength of a drachm to the ounce; or hydrarg. precip. rubra, a grain to the drachm. But these mild astringents are effective only in mild cases of eczema. The oxide of zinc is employed by WILSON in an ointment after the following formula:

R. Adipis preparati, $\frac{3}{4}$ vj.
 Gummi benzoini pulver., 3j.
 Liquefac leni calore, per horas 24 in vase clauso, dein cola per
 linteum et adde
 Oxidi zinci, $\frac{3}{4}$ j.
 Misce bene et per linteum exprime. This salve is applicable to
 slightly-infiltrated eczemas.

Of all ointments, that first employed by HEBRA, the *unguentum diachyli albi*, plays the most important part. It is the same which has long been used in profuse sweating of the feet, and it consists of emplastrum lithargyri and oleum lini, equal parts, or is better prepared as follows:

R. Olei oliv., $\frac{3}{4}$ xv.
 Lithargyri, $\frac{3}{4}$ iij et 3 vj.
 Coque l. a. in ung. moll., dein adde
 Ol. lavandulæ, 3 ij.
 M. Ft. unguentum.

This is spread upon linen to the thickness of the back of a knife, and is changed twice in twenty-four hours. It suits almost every stage of eczema, and is almost indispensable in the practice of the dermatologist. It cannot be applied to the hairy parts, on account of the hairs becoming matted together by its thick consistence. It is employed either alone, or in connection with ung. Wilsonii in equal parts, or, where there is greater thickening, with emplastrum hydrarg. in equal parts, or combined with tar, in the proportion of one part to two of ointment.

Borax is used either alone in solution, or combined with alum, or, in the form of ointment; as a lotion, it is of especial service in moist eczema of the scalp, thus:

R. Boracis venet.,
 Aluminis crudi, aa, 3j.
 Glycerini, $\frac{3}{4}$ ij.
 M. To be applied twice daily.

Borax pomade :

| | |
|---------------------------|-------|
| R. Borac. venet., | 3j. |
| Solve cum q. s. glycerin, | |
| Sebi ovilis, | |
| Ceræ flav., āā, | ℥ ss. |
| Olei oliv., | q. s. |
| ut ft. ung. molle. | |

This is used in the same manner as the diachylon.

The *green soap*, *sapo viridis* (Schmierseife) is used in eczema, either in frictions or as a plaster. The frictions are made twice a day with flannel; after each rubbing the soap is washed off completely with lukewarm water, and the affected part covered with cold-water dressings. The eczematous vesicles are thereby completely destroyed, but the sound skin in the neighborhood is undisturbed. The frictions must be persisted in until the skin has become dry and shining. Green soap used as a plaster, spread upon flannel or linen, is only suitable for greatly-infiltrated eczemas, in order to change them into acute, and so remove the exudation. In this manner even old infiltrations may be made to disappear. Green soap in solution, as *spiritus saponis alkalinus*, is of especial service in washing the hairy scalp.

Tar.—We shall in the chapter on Psoriasis speak more fully concerning this remedy, which has proved itself very efficacious in eczema, and the use of which is more especially indicated in eczema squamosum. In the other forms, as *e. rubrum* and *impetiginosum*, its application is too painful, and, as a rule, increases the inflammation, the scalp alone excepted; for tar is of value here, even when moist. There are different varieties of tar; *ol. fagi*, *cadini*, *rusei*; and that form of tar is the best which is thickest, because it remains for the longest time in contact with the diseased surface, and also prevents the access of the air most effectually. For use on the hairy parts, tar is mixed with alcohol, the hair being thus less matted together. The same combination is useful in hastening the drying of tar, which is quite important in patients treated at out-door clinics. (Dusting with starch accomplishes the same end.) More recently carbolic acid has been employed instead of tar, either in the form of ointments or in solution:

℞. Acidi carbolic, 3j.
 Solve cum glycer. q. s.
 Unguent. emoll., ℥ij.
 M. Ft. unguent.

℞. Acid carbolic., 3ij.
 Alcohol,
 Glycerini, āā, ℥j.
 Aqua destillat., ℥vj.
 M. Ft. lotio.

The unguents are useful in the same cases as tar; as a lotion carbolic acid is of service, especially in squamous eczema of the hairy scalp.

Eczema may also be treated successfully with the modified *Wilkinson's ointment* (see Scabies).

Dusting-powders.—The most common are: amyllum purum, pulvis aluminis plumosi, pulvis oxidi zinci, talcum venetum, semina lycopodii; all of them may be used alone, or in combination, as in the following formula:

℞. Amyli puri, ℥j.
 Oxidi zinci, 3j. M.

or;

℞. Aluminis plumosi,
 Pulvis iris florentinæ, āā, 3ij.
 Amyli puri, ℥ij.
 M. Ft. pulv.

Pressure.—This is a very important element in the cure of infiltrated eczema. It is true that it is only applicable to such places as have a bony surface beneath; thus, for example, eczemas on the leg or foot heal more quickly when the ointment or other medicaments are pressed firmly on them with a roller-bandage; and, eczema on the hands, when the salve is closely applied with strips of adhesive plaster. Thickening of the upper lip is frequently dispelled alone by being permanently pressed upon a piece of cork placed between the gums and the lip, as also chronic infiltration of the prepuce by pressure upon a metallic catheter introduced into the urethra.

HEBRA and HARDY have employed the *vulcanized rubber cloth* with success in the most varied forms of eczema. This may have the form of gloves, roller-bandages, shirts, etc., according to the requirements. The

smooth, shining side is brought into contact with the skin, and by it the sweat and sebaceous matter on the one hand, and, on the other, the elevated temperature and the sulphur of the caoutchouc macerate the epidermal masses, and act favorably upon the eczema itself. HEBRA recommends the rubber cloth especially in eczema of the fingers, on the flexor surfaces of the joints and scrotum. It has been proved useful also in pityriasis, xerosis, psoriasis palmaris, tyloma, and small-pox.

DÉVERGIE recommends in varicose eczema bandaging with dextrin. (Dextrin \mathfrak{z} j, aq. font. \mathfrak{z} viiij. M.)

A large number of remedies and methods might be mentioned, but we omit them because we wish to recommend only what we have ourselves tested. One can seldom cure an eczema with one means alone, but different ones must be used according to the various stages, and frequently combinations of the same; thus, for instance, tar frequently acts much better when combined with diachylon-ointment, or when the tarred part is laid in warm water for several hours. In general, the choice of remedies will depend somewhat upon whether the patients are young or old; whether they must pursue their business, or can devote themselves to the cure of the disease; whether the affection is situated on covered portions of the body, or on the face and hands.

We will present a few cases by way of example. If we had to treat an *eczema impetiginosum on the hairy scalp or ears*, we would first remove the crusts by means of oil-dressings. If the skin beneath was dry and but little thickened, the ointments given above would be sufficient for its cure; if the infiltration is greater, tar is used. But if, after the removal of the crusts, the skin is found red and moist, the repeated use of the shower-douche, cold-water dressings, and frictions with green soap, are applicable. When the swelling has to some extent diminished, and the skin is yet somewhat moist, we apply tar even in this stage; but this is to be avoided in children, for their skin is very tender, and swelling and suppuration of the glands are readily excited. Again, when the eczema is situated in the *external auditory canal*, the ear is syringed with various astringent lotions. In order to bring an ointment into contact with the whole canal, a tent of pressed sponge (or laminaria digitata) covered with charpie and spread with salve may be introduced. If the eczema is located high up in the nasal cavity, we use

astringents in the form of suppositories: Butter of cocoa, gr. xvi, oxide of zinc, gr. ij. M. Ft. suppositorium.

Once more, if a child is affected with eczema impetiginosum of the face, the part is covered with a complete mask of cloth, saturated in oil, or spread with some salve, and this is left in contact with the face until the crusts are removed and healing has taken place.

When eczema results from the contact and friction of two proximate surfaces, these should be separated by the interposition of lint, or by dusting them with powder. If the patient suffers from *eczema caloricum universale*, a moderated temperature and powdering the whole surface with starch will suffice for a cure, without employing ointments, tar, etc. Caustics are applied only to eczemas of small extent, which are greatly infiltrated. The diachylon-salve may be used even by those of little experience, since it is always of service in all forms of eczema, and is never injurious, as are some of the remedies mentioned.

[It would be out of place to enter here upon any extended discussion of this much-disputed subject of the nature and treatment of eczema; but opinions held by eminent dermatologists seem at first sight to differ so greatly, that it may not be without advantage to the student as well as to the busy practitioner to consider briefly the views entertained, their points of agreement, and difference.

As is known, WILLAN classed eczema among the vesicular diseases, not because vesicles can be demonstrated, or even are always present, in every case, but, as TILBURY FOX ("Eczema, its Nature and Treatment") asserts, "he affirmed only their typical significance; he said that their formation was the 'full height of the disease eczema.'" He fully recognized the various forms which eczema might assume, and describes at large the erythematous state of the skin found, the fissuring, crusting, sealiness, and suppuration.

WILLAN's arrangement was accepted by many, and is still held to by numbers—TILBURY FOX advocating firmly even the divisions of WILLAN into *eczema simplex* (when limited and inflammatory), *eczema rubrum* (when it is more or less general in its attacks and inflammatory), and *eczema impetiginodes* (in which the pus formation is not accountable by the degree of inflammatory action, but is clearly dependent upon the existence of a pyogenic habit of body). "Each of these varieties," continues he, "has, more or less perfectly marked, its stages of erythema, papulation, vesiculation, pustulation, and squamation: these *stages* cannot be regarded as constituting clinical *varieties* of eczema." FOX, emphasizing the discharge

feature of eczema instead of the vesiculation of WILLAN, thus defines it: "Eczema is an inflammatory (catarrhal) affection of the skin, which is mainly characterized by a peculiar discharge, stiffening linen, and drying into thin yellow crusts. It has its stages in the fully-developed disease of erythema, papulation, vesiculation, discharge, pus-formation, and squamation, which may each, under different circumstances, be more or less pronounced. As in all other inflammatory diseases, secondary results may follow: such as induration, fissuring, œdema, and the like." HARDY's definition is, "an affection characterized either by exanthematic patches, or by the development of vesicles or vesico-pustules, or by epidermal fissures, which soon give rise to a more or less abundant serous or sero-purulent fluid, susceptible of concreting into crusts and terminating in a flaky desquamation of the epidermis." BAZIN, recognizing with WILLAN the fact that vesicles belonged to the fully-developed typical eczema, thus expresses himself: "Eczema is a disease of the skin, marked in its complete evolution by the existence of small acuminate vesicles, spread over a surface more or less extensive, and containing a transparent serous fluid; the vesicles subside when the liquid they contain is reabsorbed, but more commonly rupture after twenty-four or forty-eight hours, and are succeeded by the *exhalation* and secretion of a transparent serous fluid, which concretes into lamellæ more or less dense, and is followed by a simple epidermal exfoliation." We find the same characteristics portrayed in the definitions of HEBRA, WILSON, ANDERSON, and others, or else given in their subsequent descriptions, so that most authors will in reality be found to agree in the *essentials* of the disease, some emphasizing rather the structural changes; while others lay more stress on the subjective symptoms, others again urging the nature of the disease. This fact, together with the various views in regard to the subdivisions necessary and proper, has, we take it, given rise to most of the differences of opinion in reference to this and other diseases, to which M. BAZIN has devoted an essay of nearly two hundred pages. Thus, M'CALL ANDERSON says, "the anatomical classification is the most objectionable of all," and commences his work with a consideration of four symptoms which he considers all-important, namely: 1. Infiltration of the skin; 2. Exudation on the surface of the skin; 3. Formation of crusts; 4. Itching or burning heat. He then inveighs against too close attention to the elementary lesions of cutaneous diseases, as liable to lead the practitioner away from the diagnosis of the case. WILSON, on the other hand, emphasizes these latter, giving six varieties of eczema based upon them: they are, eczema erythematosum, papulosum, vesiculosum, ichorosum, pustulosum, squamosum. HEBRA, notwithstanding his aspersions on the Willanean system, says, "Eczema appears and runs its course in five different varieties, which, arranged according to their relative intensity, will be—eczema squamosum, papulosum, vesiculosum, rubrum, and impetiginosum," accepting the latter three from WILLAN, only changing the name "solare" to "vesiculosum" in the third variety.

Some idea of the confusion arising from the various *subdivisions* which

have been made may be drawn from the fact that WILSON, in his "Lectures on Eczema," gives forty-nine varieties in his index, and ANDERSON enumerates forty-six in his. The principles on which these divisions are made are various; HARDY (and in this his views agree much with those of BAZIN, TILBURY FOX, and others), to the better understanding of the subject, makes three degrees in the development of eczema; *first*, erythematous, vesicular, vesico-pustular, or with fissures of the epidermis; *second*, when none of these are any longer present, but only ulcerations, crusts, etc.; *third*, a desquamatory stage. He also recognizes three varieties: 1. According to its appearance, *E. simplex, rubrum, feudillé* (fissum, rimosum), *impetiginosum*; 2. According to its configuration, *E. figuratum, nummulaire, impetigo sparsa, eczema diffusum*; 3. According to its location, *E. pilare, capitis, faciei, manuum*, etc. To these divisions may be added still another, commonly accepted: 4. According to the course, *acute* or *chronic*. Most of the varieties spoken of, then, will be included in one of these subdivisions, and it will be seen that they are by no means exclusive, on the contrary, that an eczema may at the same time be located in, and be called by the names of, several of them. Thus, a child may have an acute (4), diffuse (2), impetiginous (1), eczema of the face (3), which is in the pustular (*first*) stage; again, we frequently meet with diffuse (2), chronic (4), fissured (1), eczema of the legs (3), in the desquamative (*third*) stage. Fixing these varieties and stages definitely in our minds will assist materially in a ready comprehension and right understanding of descriptions of eczema wherever we meet with them, there being but few terms that cannot be included under them.

As to other complications of the subject, M. HARDY in his arrangement of cutaneous affections makes the 7th class to consist of certain diseases which, he says, recognize a primordial cause, called by him the diathèse dartreuse (dartrous diathesis), vice herpétique—this embraces eczema, psoriasis, lichen, and pityriasis; this designation means but little to us, and has not received the sanction of other leading dermatologists. BAZIN goes somewhat further: he makes two grand classes of eczema, those from *external*, and those from *internal* causes; the external from the action of irritating substances, sometimes from parasites, wherefore the two species: artificial and parasitic eczema. That of *internal* cause may be symptomatic of three constitutional maladies, scrofula, the dartrous diathesis, and the arthritic; thus the same disease occurs in his books under different headings, and is treated of in different sections, according as it is thought to belong to one or the other of these classes. Accordingly, under the herpetic or dartrous forms we find eczema rubrum généralisé and symétrique (varieties of ecz. simplex and rubrum), and in the arthritic class are eczema circumscriptum, nummulatum, and generale. These, again, run through class three, that is, according to their location, as *eczema faciei, manuum*, and so on. Quite as little accepted is this arrangement by the dermatological world, although constant allusions may be found to all these classes and names in writings of the past and present time—on this

account are they introduced here. Lastly, we may mention the innovation of Mr. WILSON, wherein he endeavors to establish a class of eczematous affections, embracing eczema, psoriasis (which name he appropriates to a variety of eczema proper, treating of what is commonly known as psoriasis (*lepra Willani*) under the title alphas), pityriasis, lichen, impetigo, gutta rosacea, and scabies; this is a part of his "clinical classification" which, indeed, has the merit, or demerit, of totally disregarding all other methods of classification as well as all pathological considerations, and taking simply the clinical view of one observer.

Most writers agree as to eczema being to some extent a disease of lowered vitality requiring tonics sooner or later, but some look upon it as a manifestation of a peculiar diathesis, such as the dartrous or herpetic, arthritic and scrofulous, of BAZIN and HARDY; M'CALL ANDERSON refers to an eczematous diathesis, and it is quite common now to speak of a gouty habit of body, and still more common to hear the strumous diathesis alluded to and charged with the causation of eczema. TILBURY FOX, taking the hint from HEBRA, of a "*faulty innervation* being the most important element in the production of eczema," goes still further than this observer, and considers *the cell-proliferation to be induced directly by nerve-irritation*; and while he admits that a strumous diathesis may influence it greatly, as also the circulation of effete products, such as uric and lithic acids, etc., may have much to do in *modifying* the disease, he emphasizes strongly the close analogy between eczema and catarrhal processes in the mucous membrane. I quote his words: "I have thus far, then, concluded that eczema is not dependent upon the existence of a crisis or diathesis in the general sense of those terms, but upon an impressionable condition of the nervous system in which the control of the latter over the nutrition of the skin is somewhat lessened; that external irritants, acting locally or generally, and internal agencies, such as the circulation of waste and effete products, may excite eruptive phenomena, and that the changes in the cell-elements may be modified to some extent by the special nutritive proclivities of the individual. Theoretically, where exciting causes are at work, and the eczematous tendency is not marked, the eruption will be localized; but it may be symmetrical where the exciting cause operates on symmetrical parts, as in the case of eczema of the hands, in bakers and washer-women, or when it acts generally on the surface, as in the case of cold. Where, on the other hand, the immediate excitant of eczema is an internal affair, then is the eczema more or less general, and it is in these cases that we meet with the inflammatory and impetiginous forms."

As to the pathological anatomy, we find no difference of opinion, from the fact, perhaps, that so few have entered the field of the microscopical study of the elements of the disease. HEBRA refers no more than to the coarser points, of the location of the vesicles being in the epidermis, between the mucous and the horny layers, and speaks of the general thickening in the connective tissue in later stages. SIMON, KLEBS, and RIND-FLEISCH, do not add to our knowledge; while TILBURY FOX and FOSTER

SWIFT (*Am. Jour. Syph. and Derm.*, No. 2, 1870) but give the result of NEUMANN, and those he quotes from BIESIADECKI; other modern writers, WILSON, ANDERSON, BAZIN, HARDY, and others, referring but little if at all to this branch of the subject; so that our author presents by far the clearest elucidation of the disease to be found anywhere.

Embracing briefly the foregoing representation of the various apparently conflicting views, let us regard eczema simply as an inflammation of the skin, attended with cell-changes, and the exudation of a peculiar fluid which stiffens linen and dries into crusts. This fluid is of course first poured out in the under structures of the skin, where are the capillaries, and may either manifest itself as œdema, or it makes its way to the surface, where, if the epidermis is intact, vesicles or vesico-pustules are formed; if not, it oozes out and is either washed off or concretes into lamellæ or crusts. Let it be further remembered that the disease is admitted by all to be accompanied by a high degree of nerve-irritation, and that latest observers believe it to depend on a nerve-paresis, other elements, as general debility, morbid blood-states, dyscrasiæ or diatheses, local irritation of the most diverse kinds, diseases of important viscera, mental depression, and so on, operating only as excitants; also that the divisions so abundantly created by numerous authors are one and the same disease modified by location, etc., or are the different *stages* elevated into *varieties*, as erythematousum, papulosum, pustulosum, etc.; lastly, that the grand division into acute and chronic, recognized by most writers, is very important, from the vastly different indications the two varieties present as to treatment.

TILBURY FOX is very explicit in his statements as to the management of this disease. He begins: "There appear to me to be three questions which every practitioner should ask himself when a case of eczema falls into his hands for treatment: Of what variety is it? At what stage is it? And what are its complications?" These are very important considerations, for much harm has been done, as many American physicians can testify, by the injudicious and indiscriminate use of the irritating applications found in books, during the acute stage of eczema, while much time has been lost, and discredit thrown on the profession, by the want of success attending the wrong application or neglect of a valuable remedy.

We must remember the exceedingly irritable state of the skin in acute eczema, and the necessity of a soothing treatment—the best and safest frequently being powders—the addition of a little camphor or morphine, or both, assisting to allay the intolerable itching and burning. The following, given by ANDERSON, and alluded to by FOX, is useful:

| | |
|--------------------|--------|
| R. Camphoræ, | 3 ss. |
| Spts. rectificati, | q. s. |
| Pulv. talci, | |
| Zinci oxidi, āā, | 3 iij. |
| M. Ft. pulv. | |

Sometimes powders of any kind are not borne well, and we must have recourse to fluids which may contain much the same ingredients; infusions

of bran, marsh-mallow, or flaxseed, are grateful, while in many cases a lead-and-opium lotion or the linamentum calcis (carron-oil) succeeds better; Fox says he prefers calamine and oxide of zinc $\text{āā } \mathfrak{z} \text{ ss ad } \mathfrak{z} \text{ j}$, glycerine $\mathfrak{z} \text{ ij}$, aq. ros. or aq. calcis $\mathfrak{z} \text{ vj ad } \mathfrak{z} \text{ viij}$, in the subacute stage. ANDERSON says that oxide of zinc, mixed with glycerine or almond-oil in the proportion of half an ounce of the one to two ounces of the other, forms a very soothing application, to which may be added a little camphor if necessary. I must add a word of caution in regard to glycerine, which is most irritating to some skins, and when we find a mixture containing it disagrees with a patient, we may often attribute it to the glycerine, and should try the same without this ingredient. I have had most excellent results from a lotion suggested to me by Dr. R. W. Taylor, of this city. It is as follows:

R. Acid hydrocyan. dil., $\mathfrak{z} \text{ ij}$.
 Bismuth subnitrat., $\mathfrak{z} \text{ ij}$.
 Aquæ destillat., $\mathfrak{z} \text{ viij}$.
 M. Ft. lot.

This I have employed as well in the acute stage of other affections, especially erythema, with great relief to the patient, and improvement in the eruption—rose, lime, or camphor water, may be substituted for distilled water, and I have sometimes replaced it with the emulsion of almonds with most happy effect. After the very acute stage, ointments are usually serviceable; the only additions to those given in the text which I would make are, the employment of the ung. aq. rosæ of our pharmacopœia instead of the benzoated, as WILSON recommends, for it is much more acceptable to the patient, and does not turn rancid; and, the use of the ung. stramonii as an excipient for astringent remedies—oxide of zinc, however, does not mix well with it. The cucumber-ointment (found in the United States Dispensatory) is alluded to by most writers, and recommended by many. I have never used it. We can never tell with certainty how a remedy will suit any particular case, and every now and then discouragements will meet us even with regard to means which we have most tried and feel most confidence in. Of this I had a forcible illustration very lately, in the case of a gentleman to whose skin oxide of zinc in rose-ointment proved exceedingly irritating, when the subnitrate of bismuth prepared in a similar manner gave almost immediate relief. Occasionally, a simple borax-wash, with the addition of a little carbonate of soda, is the very best application possible.

With regard to the severe treatment of the chronic stage, our author has given fully the views of the German school, which have found adherents in many on both sides of the water—among whom we may mention ANDERSON, a firm disciple of HEBRA, and TILBURY FOX, who also advises it, although with many restrictions. It cannot, however, with safety be used indiscriminately, and I myself saw a case proving this very strongly, occurring under HEBRA's own practice. A young girl, aged about eighteen, large and well developed, came to the out-door clinic for treatment of a

small patch of subacute eczema on one of her hands. HEBRA had just been manipulating another patient with a very strong solution of caustic potash (he makes great use of an equal part solution), and rubbed the brush he had in his hand over the patch on the young girl, intimating in his remarks that it might cause trouble if it did not cure. The patient presented herself in a few days afterward, with the whole hand swollen and painful. She was received into the hospital; the entire arm was involved in a very severe suppurative eczema, spreading somewhat upon the body, accompanied with a very high fever, so that one day her life was in danger. She remained in bed for some time, and all this from the injudicious use of caustic, and that in the hands of HEBRA. Surely others have need of caution.

Our author has said very little as to internal treatment, or the regulation of the diet. I feel I cannot impress the necessity of these points, and the value of soothing and cooling measures in the management of some eczemas, better than by a somewhat detailed case taken from the note-book of my father, Dr. H. D. Bulkley:

"October 16, 1868.—L., a well-developed German gentleman, of fifty, of sandy complexion, has always enjoyed good health, with the exception of a severe attack of rheumatism about three years ago. Has always indulged in good living, drinks only light wines, takes cold or tepid bath every day. Was attacked two months since, in latter part of July, with an eruption of 'prickly heat,' soon after a period of excessively warm weather in this city. His family (German) physician being out of town, another medical gentleman was sent for, who prescribed *Donovan's solution*; did not alter his diet or mode of living, and never looked at his tongue, or felt his pulse. He continued under the care of this adviser about three weeks, the disease gradually getting worse. His own physician, on returning, was sent for, and the patient has been under his charge ever since. Took Rochelle salts freely for a while, and has used several kinds of ointments, and was at one time rubbed liberally with 'sapo viridis,' which caused great smarting and pain. Disease continued to spread. No alteration in mode of living. Head was at one time covered with thick incrustations, which were removed with an ointment which irritated very much. Sleep disturbed. Has been using tar-soap ('Persian') for some time—also powdered oxide of zinc and arrow-root (obtained from a patient of mine).

"*Present Condition.*—Eruption covers nearly whole of the body and limbs. Scalp and both ears of bright-red color, more or less covered with thin scales, exuding in a few places—says it has been worse; edges of both eyelids and conjunctivæ inflamed; eruption also on forehead and cheeks. Excoriations at bend of each arm, under both axillæ, in both groins and both popliteal spaces. Whole body and limbs covered with patches of eczema, those on back lately appeared. Bowels open once or twice every day, eats meat generally twice a day, and takes a hearty dinner at 6 P. M.; drinks tea, coffee, and claret at dinner. Appetite good; tongue thickly coated with dirty-yellowish fur; pulse natural frequency and strength (rate not noted); no special thirst. Urine dark amber-color, with greenish tint—reaction neutral. Spe-

cific gravity 1.027. Moderate deposit of phosphates by heat, no albumen; microscopically, few amorphous urates and phosphates, very little uric acid. Ordered—

R. Pil. hydrarg.,
Pil. colocynth. comp., āā gr. xv.
Pulv. ipecac., gr. ij.

M. Div. in pil. no. vj. S. Take two every other night, and pint-bottle of Kissingen *every* morning; also—

R. Potass. acetat., ℥j.
Acidi acetici, 3 ss.
Spir. ætheris nitrosi, ℥jss.
Extract tarax. fl., ℥ij.

M. S. Take teaspoonful between meals in third of a tumbler of water—
Ordered also

Liq. plumbi acet. dil. to head and ears.

Take tepid bath, if agreeable, every day or two; starch-bath at night if the skin is irritable. Discontinue use of animal food, and all stimulating food and drinks, including coffee and claret wine, use farinaceous diet exclusively.

"October 18th.—Has taken two pills, as ordered, and Kissingen twice. Bowels moved freely, tongue much cleaner, skin of scalp and ears less red, some oozing from portions of scalp and little from groins. Took tepid bath this morning, and feels worse in consequence; it caused smarting of the excoriated parts. General feelings about the same; pulse 76, good strength. A few new spots of eruption have appeared on body and limbs, but less severe. Has attended strictly to diet. Ordered to continue every thing as before, and dust all excoriated patches with zinc and arrow-root powder.

"October 20th.—Has taken medicine as ordered, and attended particularly to diet. Redness of skin everywhere less, and eruption is drying up, having ceased to spread. Inflammation of eyes less, ears less swollen. Medicine operates freely on bowels, and he passes more water than before. Tongue less furred, moist. Has kept exuding parts covered with the powder. Continue pills every second night, and Kissingen every morning, also the mixture of acetate of potash, etc. Ordered:

R. Tannin, 3 i.
Glycerini, 3 ij.
Ung. aq. rosæ, ℥i.

M. Ft. unguentum. Also,

R. Acid. carbolicæ, 3 j; glycerini, 3 ij; aq. destilat. ℥iv. M. Ft. lotio.

Apply lotion to one side of scalp and ointment to other.

"October 22d.—Has taken medicine regularly and attended to diet, etc. General inflammatory condition of skin subsiding, but still he complains much of itching. The half of the head to which ointment was applied much better than that treated with lotion: scabs and scales almost entirely

removed by the salve; and scalp beneath is much healthier, while the other side is almost entirely covered with crusts of greater or less thickness. Thinks he has passed less urine lately. Ordered to continue all as before, but take double dose of mixt. pot. acet., and discontinue carbolic-acid lotion, applying ointment to both sides of the scalp and beard, and to right groin.

"October 24th.—Passed more urine; head and beard decidedly better; right groin about the same. Continue treatment.

"October 26th.—Still improving. Head, cheeks, and ears, evidently better; groins about the same; discontinue tannin to right groin and apply the following:

℞. Zinci oxidi, 3 i.
Glycerini, 3 i.
Ung. aq. rosæ, 3 i.
M. Ft. unguent.

Complains of itching and sleeplessness. Ordered: ℞. Pulv. camphoræ, extract. hyoseyami, 53 gr. j. M. Ft. pil. S. Take one such three or four times daily.

"October 29th.—Not quite so well. Ordered to discontinue pills of camphor, etc. Take two of the preceding pil. hydrarg., colocynth, and ipecac.; continue acetate-of-potash mixture, and ordered:

℞. Solut. Fowleri, 3 jss.
Liquoris potassæ, 3 ss.
Ferri ammon. citrat., 3 j.
Tinc. cinchonæ comp., 3 ijss.

M. S. One teaspoonful in wineglass of water, directly after meals.

"October 31st.—Patient called at office to-day in a carriage. Is gradually but decidedly improving. Change very marked since first visit (two weeks yesterday). Takes medicine regularly, and uses ointments as ordered; has adhered rigidly to diet. Most, if not all, the eczematous surfaces have ceased to discharge to any amount. Complains of inability to sleep. Ordered: ℞. Potass. bromid. 3 j; aq. font. 3 j. M. S. Take two teaspoonfuls every three hours at night until sleep. May eat *fresh meat once a day*. Rest of diet the same.

"The patient continued to improve, and in two weeks was able to attend regularly to his business, the eruption being entirely gone; nor has it yet returned, after the lapse of nearly two years."

This case, we think, places beyond doubt the necessity of a careful and judicious "management" of a case of eczema, and this dependent quite as much upon a general knowledge of medicine as upon a special knowledge of this branch; let us, then, bear in mind that, to be a good dermatologist, one must be a careful physician. This leads me to call attention to the views of TILBURY FOX as to the impetiginous variety of eczema, because I feel that they will meet the sanction of all who have studied the disease clinically, not from the specialist's stand-point alone, but from the broader one of the general practitioner. Having remarked that, in cases where the

pus-formation is accounted for by the intensity of the inflammation, we must pursue the same treatment as in *eczema rubrum*, he continues: "But this is not the case where the pus-formation is out of all proportion to the local inflammatory action, where it is clearly due to the existence of a well-marked pyogenic habit of body; and this applies as well to the case of the infant as the old man. Here a building-up instead of a pulling-down treatment is called for. In true *eczema impetiginodes*, the diminution in the pus-formation is to be brought about by the use of general remedies: cod-liver oil, steel, good food, fresh air, and the like. I press upon the attention of the profession this point respecting the relation between the pus-formation and the degree of inflammation on the one hand, and the existence of the strumous diathesis on the other."

We may add that CAZENAVE, WILSON, BAZIN, and HARDY also to some extent, SQUIRE, NELIGAN, and others, emphasize the necessity of internal medication; while HEBRA and ANDERSON are leading the modern school greatly in the way of trusting entirely to external treatment—certainly a fascinating plan after one has personally witnessed the results obtained by the former in hospital practice.

I will close with yet another quotation, which gives a good summary of the whole subject:

"We have in *eczema* a curable disease, running, as a rule, through certain definite stages—the passage through which we should promote; aggravated by any thing that 'irritates' the skin itself, from within or without; occasionally relieved, or even aborted, in its slighter forms or earlier stages, by soothing remedies; liable to be complicated by accidental occurrences consequent upon the persistence of congestion, such as *œdema*, induration, atrophy, etc.; modified by constitutional conditions, especially *gout*, *struma*, and *syphilis*; induced by organic diseases of vital organs—the liver, the kidneys, the heart, the stomach; associated always with a lowering of the general vitality of the system, and not cured by any 'specific.' I venture to lay emphatic stress on two of these points, viz., the modification of *eczema* by different constitutional conditions, and the necessity for adopting a soothing plan of treatment always in the earlier stages of the disease."—L. D. B.]

BULLOUS INFLAMMATION.

PEMPHIGUS.

Syn. *Pompholix*, *Blasenausschlag*, NEUMANN; *Fibris Bullosa*, *Phlyctæna*, *Bulla*, *Wasserblasen*.—L. D. B.

By *pemphigus* we understand a cutaneous affection, in which the epidermis of one or many regions of the skin or mucous membrane is raised into blebs, from the size of a pea to that of a nut, or even much larger, whose contents may at first be clear or yellowish, but afterward become cloudy and puru-

lent, while the surrounding skin is either normal in color or reddened. Red lines frequently radiate from the bullæ (lymphatic or capillary vessels). If we remove the epidermis, we at first find the corium exposed; a little later in the disease new epidermis is formed, so that the contents of the bulla lie between two layers of epidermis. When the blebs are healed, a dark spot remains, more rarely a cicatrix. There are two forms of the disease, *pemphigus acutus* and *p. chronicus*. The first is common in children and rare in adults. It runs its course in from three to six weeks, with or without febrile movement, and generally with repeated accessions. An erythematous redness sometimes precedes the eruption, or this may be absent. In exceptional cases the contents of the bullæ are sero-sanguineous. The course is, in most cases, favorable; the bullæ dry up, and the excoriations heal without the formation of scars; a fatal issue is expected only when the eruption is extensive, and affects cachectic and ill-nourished children. The existence of acute pemphigus, which is denied by WILLAN, BATEMAN, and HEBRA, can be considered as beyond doubt, since the observations of WICHMAN, RAYER, GILBERT, BÄRENSPRUNG, THOMAS, STEFFEN, MOSLER, KÖBNER, STEINER, and others, but its appearance, although common in children, is always rare in adults.

Pemphigus chronicus, the second form, is characterized by the great length of time during which new eruptions of bullæ appear, which lower the vitality, and finally induce death by exhaustion. The clinical appearance of chronic pemphigus differs in some cases from what has been described. The subjective phenomena are either itching and burning, or none at all.

Pemphigus Foliaceus.—In this the bullæ are small, their covering flaccid, not tense, their contents milky or yellow, and this dries to crusts; or the bullæ rupture very early and the epidermal covering hangs in broad, pointed shreds from the excoriated spots. If we remove the crusts, in case any have been formed, the skin is found excoriated, and the under surface of the crusts has numerous villous projections, consisting of sebum, which occupied the outlets of the sebaceous glands. Normal epidermis is never formed beneath the crusts.

The following division of this disease is but little appropriate:

1. *Pemphigus benignus*, which occurs mostly in children, and disappears in from six to eight weeks, without returning.

2. *Pemphigus malignus*, or *cachecticus*, in which, after the rupture of the bullæ, losses of substance remain in the skin, which are covered with croupous exudation. The result is fatal.

3. *Pemphigus Gangrænosus*.—STOCKES describes a disease under this name, which is developed in the first three years of life in poor children, who live in moist localities. Within two or three days bullæ are seen which contain a clear limpid or a yellowish fluid. These become confluent, rupture, and pour out a foul-smelling liquid. The edges are undermined, and the base of the bulla is covered with a gangrenous coating. The disease occurs mostly behind the ears, sometimes also on the hands and feet, occasionally in the axillæ, the breast, and abdomen, on the inner surface of the ear, in the mouth, or on the lips. It destroys the external ear, extends into the auditory canal, and sometimes to the eye, ruining the sight. Death follows generally in from ten to twelve days, with symptoms of the greatest exhaustion.

Among a large number of sick children we observed one similar case, yet we do not feel justified in describing it as pemphigus. Within a short period of time lax bullæ of the size of a pea, with dark-red contents, confluent on the face, hands, and feet, and isolated on the body, were developed in a child, which had become quite hydræmic, from whooping-cough and profuse diarrhœa, and in whom there were at the same time hæmorrhages in the skin and kidneys. We think that this disease should be designated purpura scorbutica rather than pemphigus.

Bullæ are likewise formed on the mucous membrane of the mouth and pharynx (ROLLET); the epithelial covering parts very soon and leaves an excoriated mucous membrane.

Etiology.—We are not at present able to give the causes of this obscure disease; statistics furnish the fact that one out of every 700 new-born children has pemphigus.

According to STEINER (*Archiv für Dermatologie und Syphil.*, 1869), pemphigus is most frequent during the first month of life, less often between the sixth and eighteenth months. Sex makes no difference, nor does the constitution, climate, or season of the year; nor the manner of living, nor suppression of the urine;* quite as little effect has arthritis or syphilis.

* MALMSTEN found crystals of uric acid in the bullæ.

BAMBERGER (*Würzb. Med. Zeitschr.*, 1860) analyzed both the contents of the bullæ in pemphigus and also the urine, and found the solid constituents of the latter present in much less quantity than normal; but the urine is relatively more

Anatomy.—The microscopic examination of the fluid in the bullæ shows it to consist of serum; we afterward find pus, and sometimes also blood mixed with it. The contents at first have a neutral reaction; in a later stage it is faintly alkaline. In the early stage of the disease the cells of the rete Malpighii are extended in length, so that the bulla has a reticulated appearance (but not so striking as in burns, where long threads are formed); the whole cavity of the bulla is subsequently filled with fluid. The chemical analysis of the bullous contents and of the urine has as yet given no sufficient explanation as to the nature of the disease; quite as little has pathological anatomy furnished; in one case amyloid degeneration of the liver and spleen was found.*

abundant in urea, uric acid, the chlorides, and earthy phosphates, and poor in phosphoric and sulphuric acids. The most striking peculiarity, however, is the presence of ammonia; neither albumen nor sugar was found in it. The fluid of the bullæ contained pus, a few blood-cells, epidermis-cells, and also fibrinous threads, leucin and tyrosin. Ammonia could be detected, but no urea. The blood showed in general a diminution of its solid constituents, especially albumen. BAMBERGER believes that the ammonia is first present in the blood, and is thence conveyed to the contents of the bullæ (*see Arndt, Jahrbuch, 1860*).

* Dr. HERTZ (*Greifswalde, Med. Beitr.*) reports a case of chronic pemphigus in a girl twenty-one years old, which had lasted from youth. The *post-mortem* examination gave the following: body very small and anæmic, the skin in general pale-colored; on the trunk, upper and lower extremities (with the exception of the palms of the hands and soles of the feet), were numerous irregularly arranged, darkly-pigmented spots of one-half to an inch in diameter, in many places covered with crusts. The inguinal, axillary, and mesenteric glands were swollen, the spleen lax, the parenchyma of a grayish-red, and soft, the connective tissue abundantly developed; the very greatly enlarged Malpighian vesicles presented the appearance of numerous semitranslucent bodies, resembling sago-kernels; the liver, greatly enlarged, especially in thickness; the acinous structure was difficult to recognize, and only on single places were the yellowish-gray peripheral portions of the lobules distinguished from the more grayish-brown central portions. The cortical substance of the kidneys was somewhat diminished, and of a dirty-yellow color.

But few of the liver-cells proper could be seen on microscopic examination, but uniformly transparent, shining masses of irregular form and varying size were found, besides many free fat-cells, and a small number of completely-degenerated liver-cells with granular and fatty contents. With the addition of iodine and sulphuric acid, the well-known reaction followed. The spleen was also discovered to have undergone amyloid degeneration, but not the kidneys, nor the intestinal epithelium. When the epidermis was removed from a macerated portion of skin, the pigmentation of the dark-colored spot was seen, even on a cursory examination, not to be diffuse, but macular. By microscopic investigation of perpendicular sections, the papillary portion of the corium was found to be traversed by dark stripes con-

Diagnosis.—The diagnosis of pemphigus is generally not difficult, when the peculiarities of the bullæ, as described, are carefully studied. It is liable to be confounded alone with *herpes iris*, in which, as is known, the blebs sometimes have a similar nature. We must confess that we cannot always distinguish a fully-developed herpes from pemphigus; it may then be necessary to await the further course of the disease. Herpes passes over without returning; in pemphigus, new bullæ are continually formed, and, even in acute pemphigus, new accessions of bullous eruptions occur within a certain time.

Prognosis.—Single bullæ recurring only after a long interval are never dangerous to the patient. If their number greatly increases, and their contents rapidly decompose, lymphangitis is set up in the neighborhood, the patient is weakened, pyæmia ensues, or pneumonia, nephritis, or pyelitis, and the prognosis becomes unfavorable. Pemphigus occurring in children may have an unfavorable course when it is complicated with bronchial or intestinal catarrh, or diseases of the kidneys and hæmaturia (STEINER). The prognosis is always unfavorable in chronic pemphigus in adults, including pemphigus foliaceus.

Therapeutics.—Quinine alone of all the internal remedies is worth mentioning, for, in cases where the eruption is preceded by fever, it prevents this, and may thereby check the formation of bullæ. Other means, as iron, iodide of potash, arsenic, carbolic acid, and mineral waters (Karlsbad), have but little effect. The local treatment consists in the use of baths, douches, enveloping the body in wet cloths, painting the skin with tar, and tar-baths, covering the skin with various ointments, especially the unguentum diachyli, and dusting the surface with starch or semina lycopodii.

[Our author, when treating of syphilis later on, speaks of having seen one case of syphilitic pemphigus of the fingers in an adult, demonstrated by Prof. ZEISSL, and alludes to pemphigus neonatorum as being of fre-

sisting of brown fatty and granular pigment, running parallel to the axis of the papillæ, and in most cases adjacent to the somewhat enlarged blood-vessels. Otherwise the papillæ presented their normal condition in regard to size and structure, and no reaction could be produced by iodine and sulphuric acid, either in the stroma of the papillæ or in its vessels. There was no abnormal coloration of the rete Malpighii.

quent occurrence, implying that he means a syphilitic pemphigus. This question of the specific nature of the latter has been the subject of much discussion, although by far the greatest weight of evidence seems to be in favor of accepting a syphilitic origin, indirect, if not direct. Most authors agree as to the rarity of the disease in adults as a symptom of syphilis, but individual cases are reported by leading syphilographers, so that others are constrained to admit its existence. BAZIN gives the four opinions entertained by writers on the subject of infantile pemphigus thus: "1. Some assert that pemphigus of the newly-born has no other significance than that its time of appearance is during early life (Valleix, Gibert, Cazeaux, etc.). 2. Others hold it an almost certain and pathognomonic sign of congenital syphilis (Paul Dubois, Depaul, Bouchut, Duges, Lebert, Cazenave, Trousseau, Huguier, Vidal (de Casis), Maisonneuve, Montanier, etc.). 3. Ricord and Diday, adopting an intermediate opinion, regard it as the expression of a peculiar cachexia in the fœtus, induced by the influence of syphilis in the mother. 4. Others, among whom we cite Stolz, Gubler, and Gintrac, admit two species of infantile pemphigus, one the manifestation of a specific nature, and the other completely distinct from syphilis, and connected possibly with some state of the constitution as yet but little determined." The last opinion is the one entertained by BAZIN.

ROLLET supports the view of a syphilitic variety; LANCEREAUX the same; BERKELEY HILL says that the result of the discussion in the French Academy, in 1851, on the subject, with Paul Dubois as a leader in favor of the specific nature, and Cazeaux against it, "brought to light new observations, which satisfactorily show that pemphigus is an undoubted symptom of syphilis." HENRY LEE states that "pemphigus in infants is almost always of syphilitic origin." Among other advocates we mention HEBRA, KÖBNER, NIEMEYER, A. T. THOMPSON, FOX, and BUMSTEAD, while HARDY, after canvassing the matter, declares his "ignorance in regard to the etiological circumstances of this variety of pemphigus." WILSON refers to a bullous syphilide, but makes it distinct from pemphigus. Infantile pemphigus usually occupies first the palms of the hands and soles of the feet.

This disease in infants is very fatal—almost the only good results which have been obtained have been by the immediate administration of mercury, either directly to the child or through the mother's milk, together with tonics suitable to the age. All cases of pemphigus will be found in debilitated persons, and demand good nourishment and tonics, such as the mineral acids, iron, quinine, cod-liver oil, and the like. WILSON has derived good results from the use of arsenic. BAZIN recommends, locally to puncture the bullæ, in order to diminish the irritation, and they are then to be treated as ordinary blisters, dusted with powders which are emollient or slightly astringent. If the sores are not inclined to heal, FOX uses a solution of nitrate of silver (gr. iij or iv ad ℥j).—L. D. B.]

PUSTULAR INFLAMMATION.

ACNE.

Syn. *Finnen*, NEUMANN; *Varus*, *Ionthus*, *Whelk*, *Stone-pock*.—L. D. B.

By acne is understood an inflammation of the sebaceous glands and hair-follicles, which shows itself on the surface in the form of papules, nodules, or pustules, from the size of a millet-seed to that of a bean. In cases where the inflammatory process extends deeply, and includes the whole thickness of the cutis, a more or less extended infiltration takes place around the pustules. There are three varieties, *acne disseminata*, *acne rosacea*, and *acne mentagra* (*sycosis*).

Acne disseminata appears as:

a. *Acne vulgaris*, which attacks mostly the skin of the face, breast, and back, is generally accompanied with comedones and seborrhœa, and has the following forms: *Acne punctata*, when a comedo-point is situated in the middle of a reddened papule; *acne pustulosa*, when pus is present; *acne hordeolaris*, when the pustules have a lenticular shape; *acne indurata*, when there are larger infiltrations, circumscribed, extending deep in the skin.

b. *Acne frontalis* (*acne varioliformis*) comes on the scalp and forehead in the form of papules or pustules of the size of a hemp-seed, which dry to small crusts; it usually accompanies or follows eczema, and the pustules leave cicatrices.

c. *Acne cachecticorum* is found in poorly-nourished or debilitated persons, as copper-colored or purple nodules or pustules, containing a little sero-purulent matter; these are most frequent on the breast, abdomen, inguinal region, back, and buttocks, and are sometimes combined with lichen scrofulosorum.

d. *Acne artificialis*, produced by the action of tar (*tar-acne*).

There are a number of medicinal substances which are capable of exciting an eruption on the skin, after a longer or shorter time, according to its vulnerability; this eruption may consist either of a transitory redness alone, or of swelling and inflammation, with even superficial losses of substance. Tar especially operates in this manner, and the phenomena occasioned by it may be divided into—1. Such as result from the im-

mediate application of fluid tar ; and 2. Those from the action of air impregnated with the vapor of tar. The effects of fluid-tar upon the skin are general or local. The general do not necessarily follow in all persons, and are only present when large portions of the skin are tarred. They are, fulness of the head, pain in the stomach, vomiting of a dark-colored fluid, and dark fecal evacuations. Whenever one-third or more of the surface of the body is covered with tar, the urine soon becomes high colored, this diminishing in intensity, however, according to the length of time which has elapsed since the application. By the addition of sulphuric acid, the smell of tar is strongly developed, and a beautiful blue color results from the addition of the chloride of iron. It makes no difference which form of tar is used (*oleum fagi, rusci, or cadini*). These changes occur in the urine, especially during the first few days after the applications of tar, while, after repeated use of the same, but very slight alterations are seen ; it would thus appear that, after the orifices of the follicles have become stopped up with the tar, the further absorption of it is diminished. The same is seen in patients who, after having spent several days continuously in the bath, are wholly coated with tar, hardly any variation in the color of the urine being noticed.

The *local phenomena* may be acute—swelling, redness, and inflammation being produced, or even an acute eczema, which may extend beyond the parts treated with tar ; in such cases we must desist from the attempt to use tar any further. It cannot be told beforehand what the result will be, but the beneficial effects of this remedy in skin-diseases are so great that we cannot afford to abandon its use simply from the fear of inducing such dermatitis in individual cases.

Quite other results follow, however, from the long-continued use of tar. Every dermatologist knows that frequently, when the disease treated is itself improving, collections of matter may be formed beneath the coating of tar. Thus, if we paint a healthy portion of the skin with tar, we find, after the first eight days, that the orifices of the follicles are closed with a black speck, like a comedo. After a few days these points are surrounded by a pale-red halo, which increases in size, and gradually papules are formed, from the size of a pin's head to

that of a pea (acne-pimples), which afterward suppurate (acne-pustules). Air impregnated with the vapor of tar produces the same results; an eruption is formed over the whole surface of the body, and the face especially is the seat of numerous comedones interspersed with an eruption of acne; the conjunctiva bulbi is injected, sometimes with vesicles on it; the breast and back often remain free, while the lower extremities are covered partly with comedones, partly with acne papules and pustules, which in places reach the size of a hazel-nut. As this appearance strongly resembles that produced by the action of fluid tar upon the skin, we may readily infer that tar in the form of a vapor likewise produces tar-acne. Thus, for example, I observed the same eruption on the workmen in a factory where tar was substituted for oil for the purpose of greasing the machinery; and, when this was again disused, no case of disease of this kind occurred. Acne is very frequent in tar-manufactories.

That it is not the breathing in of the tar-vapor that causes the eruption is shown by the fact that those places on which the clothing fits closely, as the breast and back, which are otherwise the favorite seat of acne disseminata, remain free, while the face and extremities are affected.

To this class belongs also the acne resulting from the internal use of iodine. According to VOISIN (*Wiener Med. Wochenschrift*, 1869), bromide of potassium produces also an eruption of acne.

Acne is never seen in children, and rarely makes its appearance before puberty. It occurs alike in all climates, in both sexes, and even in old age. We know but little as to its causes. That the abstinent are especially attacked is not true, but it does affect the continent as well as those who go to excess in venery. Quite as little can we discover any connection in its appearance with the use of certain articles of food, as salt, or highly-seasoned substances, etc. On the other hand, it is found more frequently on those laboring under dyscrasic diseases, as tuberculosis and scrofulosis, in whom, as we know, an abnormal sebaceous secretion is frequently present.

CHAUSIT describes an *acne atrophica* as a peculiar change in the sebaceous glands marked by hypersecretion, which goes on to the formation of

hard, brownish, firmly-adhering crusts, the skin beneath the scabs appearing reddened and greasy; the glands gradually become atrophied, and deep, whitish scars result. The most common situation is the face. Duration from six to eight years. Causes obscure. The description answers more nearly to that of *lupus erythematodes*.

Course.—As above mentioned, acne consists in an inflammation of the hair-follicles and sebaceous glands, the latter being especially concerned in it. The inflammation is caused by the prevention of further excretion, by the plug of accumulated sebum, and the consequent mechanical irritation. The course is readily traced. A slight inflammatory redness occurs around a dry comedo-plug, commonly in consequence of rubbing it with the fingers, or seeking to squeeze it out; the comedo now becomes saturated with a serous fluid, and in this condition is easiest removed. If this is not done, a hard, painful inflammatory exudation takes place, and the sebaceous contents mingled with pus are constantly increased by new exudation, and a pustule is formed; this may rupture and discharge pus, or dry to a yellow-brown crust, which falls off spontaneously, leaving a very superficial scar.

When the inflammation is greater, very hard infiltrations are formed, from the size of a pea to that of a hazel-nut, like boils, extending deep into the tissue of the cutis, in which the process of suppuration proceeds slowly; in these cases the inflammatory process appears to involve large groups of sebaceous glands. In acne cachecticorum the inflammation is very indolent; the large pustules dry, and, when the crusts fall off, superficial scars, more or less discolored, remain.

Prognosis.—Single acne-pustules, occurring here and there acutely, disappear of their own accord, but acne disseminata of the face, breast, and back, is an obstinate disease, marked by continual accessions, and hence its treatment must be prolonged through months or years. Tar-acne ceases naturally after the removal of the cause; in the cachectic acne, treatment must be directed specially to the predisposing cause.

Therapeutics.—I pass over the long list of the much-recommended internal remedies, which for the most part are useless, and speak immediately of the local treatment. The comedones

present must be treated in the manner already described (page 75). The skin should be scarified in *acne pustulosa*, and then rubbed with *spiritus saponis alcalinus*, glycerine-soap, or *kali-crème*. The frictions should be made with flannel or coarse crash; every four days the treatment is suspended in order not to irritate the skin too greatly. The sulphur sand-soap or the iodide-of-sulphur soap is rubbed in as ordinary soap, and the foam left on several hours, or the following mixture may be used:

℞. Lac sulphuris,
Glycerini,
Carbonate of potash,
Alcohol, āā partes equales (ZEISSL).

This sulphur-paste is applied to the affected parts in the evening, and washed off in the morning with almond-bran water. Douches and vapor-baths assist the cure. In some cases of *acne indurata*, in which the skin is infiltrated to a considerable extent, I do not use scarification, but apply the *emplastrum mercuriale* during the night; the infiltration generally disappears under this treatment, and incisions are afterward made when the pus has approached nearer the surface. In *acne* of the breast and back, we use Vlemingx's solution,* which is rubbed in and left applied several hours. Dry and wet cups are of service in *acne* of the breast and back. The iodide of sulphur (iodine four parts, sulphur one), and corrosive sublimate, have also been found useful. Kumerfeld's wash,† alcohol, ether, and the princess water (*aq. cologniensis* ℥vj, *pulv. alum. plum.* ʒj), can be tried, as also almond-flour (*pâtes d'amandes*), tincture of benzoicum, and borax.

[* ℞. Sulphuris, ℥ij.
Calceis viv., ʒj.
Aquæ font., ʒxx.
Coque ad remanent. ℥xij, dein filtra.—L. D. B.]

† ℞. Camphor, ʒss.
Gum arab., ʒj.
Lac sulph., ʒvj.
Aq. calcis,
Aq. rosæ, āā, ʒij.
M. Ft. lot.—L. D. B.]

[Opinions differ greatly both as to the classification and treatment of what has been called acne. Thus, while HARDY treats of comedo, seborrhœa, acne simplex, and acne rosacea, all under the one head of acne—including under this name “all the diseases which may affect the sebaceous follicles”—many authors, with HEBRA, separate them into so many distinct diseases. TILBURY FOX couples acne rosacea with the other forms, punctata and indurata, but separates comedo and seborrhœa from these. WILSON makes them all disconnected diseases, and enumerates the five stages of acne proper (simplex, disseminata, or vulgaris) to be *acne punctata, coniformis, pustulosa, tuberculata, indurata*. BAZIN considers acne rosacea with other forms, and makes seven varieties; CAZENAVE followed WILLAN, and admits three varieties, acne simplex, indurata, and rosacea, classing also, after BIETZ, acne sebacea (seborrhœa) with them.

Perhaps there is no disease in the treatment of which the two schools stand so directly opposed as in the case of acne. NEUMANN well represents that of local or external treatment, whose leader, HEBRA, remarks, “The uselessness of internal remedies against acne compels us to resort to local applications;” and WILSON may be taken as presenting the views of the other side, far larger in numbers, who recognize a constitutional disorder and consider local treatment of secondary value; while HUNT goes to the extreme, and trusts to arsenic alone, using occasionally a bichloride-of-mercury lotion. BAZIN recognizes three internal causes, the scrofulous and arthritic diathesis, and syphilis, and speaks strongly of the necessity of combining the use of general alteratives with local applications, criticising HARDY for his exclusive use of local treatment.

But little is found in the works on the skin as to the character of the internal treatment to be followed, and I present two cases from among many of my father, Dr. H. D. Bulkley, illustrative of this point:

“*Acne Indurata*.—May 24, 1870.—Mrs. E., aged thirty-seven, married seven years, has not been strong for a long time, although general health is fair. Bowels inclined to constipation, menses normal—has had much heat of head and headache; she has been in the habit of using ‘Lily White,’ for complexion, for past four or five years, and has been a great sufferer from her present trouble during two or three years past—treated most of the time by different persons. Her present condition is poor, aphthous sores in mouth, tongue clean; whole face and forehead covered with large pustules of acne indurata, of deep-red color, some in full suppuration and feeling very sore. Ord. ℞. Mass. hydrarg. pil., colocynth co., āā gr. ij, pulv. ipecac., gr. ʒ. M. Ft. pil. Take two such every second night and Kissingen water Oj every morning. Also

| | |
|------------------------|-------|
| ℞. Liquor. potassæ, | 3 iv. |
| Ferri ammon. citrat., | 3 j. |
| Tinct. nucis vomicæ, | 3 ij. |
| Tinct. cinchonæ cc. ad | 3 iv. |

M. S. Take teaspoonful after meals. Also—

R. Potassii sulphureti,
Zinci sulphatis, aa, ʒj.
Aquæ rosarum, ʒiv.

M. Ft. lotio. Apply to face on muslin twice a day, and wash face with tar-soap.

Take nourishing diet, beef-tea, beef, mutton, etc., for she had been reduced by one physician lately by low diet, etc., from 129 to 95 pounds.

"May 31st.—Whole face and forehead remarkably improved, nearly all the pustules dried or drying up; color very much faded—says that wash smarted little at first, and tar-soap considerably, but not afterward. Feels stronger and better; appetite improved—in fine spirits. Continue Kissingen water for few days—other remedies the same.

"June 8th.—Complexion much improved—still few new accessions of pustules—tar-soap irritates—ordered to stop it, but continue wash. Has some dyspepsia, floods considerably. Ordered to discontinue mixt. liq. potass., keep bowels relaxed with pil. prandii, and take

R. Sol. Fowleri, ʒiss.
Ferri ammon. citrat., ʒj.
Tinct. nuc. vomicæ, ʒij.
Tinct. cinchon. co., ʒiv.

M. Teaspoonful after meals, three times daily.

"June 16th.—Face much better—old pustules but slightly elevated—only one new pustule since last; wash irritates slightly—pills suit better than first ones; takes them every second night. Continue treatment.

"June 23d.—General health very much improved, face gaining more slowly than at first—only two or three indurations left—face of a deep-red color—wash irritates, discontinue it, and also tar-soap—ordered to continue mixt. arsenic and iron, and

R. Hydrarg. bichlor., gr. iv.
Ammon. muriat., gr. x.
Aq. rosar., ʒij.

M. Ft. lot. Dilute first if it causes irritation.

"November 11th.—Received letter from husband, who is a physician, stating that 'a perfect cure has been the result.' Patient was under active treatment and observation only thirty days."

The second case, although not so striking, is none the less instructive from the length of time the disease had existed, and the age of the patient being that in which these affections are most wont to appear.

"*Acne Simplex, and Punctata (Comedones).*—November 11, 1870.—Miss B., aged twenty-one, has always enjoyed good health, but is apt to be constipated; catamenia regular, but rather scanty. Has had eruption on face for eight years, it is worse at menstrual time; has been under the care of many physicians and used various remedies. Tongue covered with a whitish coat, and rather pale, appetite good, complexion very muddy, both cheeks and forehead thickly sprinkled with different forms of acne, mostly papu-

lar. Ord. pil. hydrarg., col. et ipecac., two every second night, and a pint of Kissingen after pills, and a half-pint on the alternate mornings; also:

R. Potass. acetat., ℥j.
 Acidi acetici, 3j.
 Spts. ether. nitrosi, 3j.
 Ext. tarax. fl., ʒjss.
 Syr. prun. virg., ʒij.

M. S. Take teaspoonful in $\frac{1}{3}$ glass water, between meals; careful diet.

"*November 18th.*—Medicine operated freely—urine increased—complexion decidedly clearer, fewer pimples. Ord. mist. arsenic, iron, etc., same as in preceding case; also the same wash, and directed to use tar-soap.

"*November 25th.*—Skin evidently more healthy, face smoother; feels much better—continue all the same.

"*December 9th.*—Improved—face much better—but few papules; slight desquamation produced by wash—continue all.

"*January 21, 1871.*—Very good progress. Continue treatment.

"*February 17th.*—Has used all the remedies from the first continuously. General health excellent—still few papules about skin—continue mixture of iron and arsenic, wash, and tar-soap, and take half a drachm of acetate of potash with half a drachm of sweet spirits of nitre, before meals; also: .

R. Plumbi iodidi, ʒj.
 Ung. aq. rosar., ʒj.

M. Ft. unguent. Apply to indurated pimples about chin.

"*March 22d.*—Face remarkably improved since first—complexion very clear—still continues medicines and applications, using the acetate of potash and nitre whenever the water is scanty and high-colored.

"*May 24th.*—Face almost entirely well—new spot occasionally—continue omnia." Patient has not returned up to time of writing, September 1, 1871.

The wash employed in both these cases, and many others, of sulphuret of potash and sulphate of zinc āā 3j in rose-water ℥iv, is most serviceable, but I must speak a word of caution in regard to it: it does not suit all skins, and it may be different when prepared at different stores. It should have a copious white sediment, which is to be shaken up when applied, and dries as a powder on the skin. I say this, because I have had it brought back to me by patients, the druggist having carefully filtered it, thus removing its efficient portion. I have never used the severe measures recommended in the works on this subject, nor have I seen them used, except in the hospitals of Vienna and Paris; but the authorities are so high, that I give a brief statement of the means recommended by various writers. HARDY uses an ointment of the proto-iodide (green iodide) of mercury, of the strength of from two to sixteen grains to the ounce, and, in rebellious cases,

employs even equal parts of the mercury and salve. **BAZIN** thinks it best to begin with a strong preparation, and orders the biniodide (hydrarg. iodium rubrum) about six drachms to the ounce. Of this he makes a thin coating which produces an artificial eruption, which subsides in a few days, and the process is to be repeated until the disease is removed. **ROCHARD's** ointment, so famous, is thought to be no better than these mentioned, and to possess the disadvantage of being a less stable and certain compound; his formula is as follows, as taken from Hebra's book: \mathcal{R} . Iodinii puri gr. viij, calomel \mathcal{D} j. Leni igne fuis, adde unguent. communis \mathcal{Z} ij, \mathcal{M} . **HARDY** also counsels the application of an ointment of the salts of iron, especially the peroxide. He combines the vapor or sulphur bath with all his applications. **TILBURY FOX**, after emphasizing the necessity of attending strictly to the general health, says he generally prescribes bichloride-of-mercury lotion, grs. ij to water \mathcal{Z} viij, with borax 3 ss and glycerine; and in chronic cases some revulsive, the biniodide of mercury (gr. v ad \mathcal{Z} j) he says is one of the best. In the indurated forms, he pencils each spot once or twice with acid nitrate of mercury. **SQUIRE** says that, in the majority of cases of acne indurata, stimulating applications will be required (\mathcal{Z} j to 3 iv of sulphur to the ounce), or the red iodide of mercury (gr. v ad xxx to the ounce); but he also recognizes the necessity of general means, especially the overcoming constipated bowels which are common in this disorder. **WILSON** recommends bichloride, one or two grains to the ounce. A favorite treatment of some New-York physicians is the administration of about half a drachm of acetate of potash thrice daily, together with regulation of the bowels, and the following local application: \mathcal{R} . Caustic potassa grs. xv to xxx, aquæ \mathcal{Z} j, \mathcal{M} ., to be used as follows: The patient holds his face over a basin of steaming water, in which he dips cloths and holds them to the face as hot as possible, repeating the operation several times; the solution is then gently applied and left on—it may be diluted if it causes much smarting. The first effect is to redden the face considerably, but this soon subsides, and improvement follows. I have had some success with this plan, but prefer that indicated in the cases given above.—**L. D. B.**]

2. ACNE ROSACEA.

Syn. *Kupferrose*, **NEUMANN**; *Gutta Rosacea* or *Rosea*, *Couperose*, *Copper Nose*.—**L. D. B.**

This affects the face, principally the nose, cheeks, chin, forehead, and neck, and assumes the form of papules, pustules, maculæ, or a diffused redness. It is a chronic inflammation of the skin caused by prolonged stasis in the capillaries, whereby the skin is reddened, the existing vessels enlarged, or new ones are formed, and acne efflorescence may coexist. When the disease is of long duration, large tumors are formed by cell-infiltration and hyperplasy of the connective tissue deep in the skin, and in

very severe cases of this disease they reach even the size of the fist, are lobulated, red, and full of comedones (*Rhinophyma*). They have either a broad base, or are pedunculated. In the first grade, the nose is affected with seborrhœa, and is shining-red, and cool to the feel. In the second grade, acne efflorescences of various sizes are developed on the skin, which is already reddened by the enlarged and newly-formed vessels. In the third grade, single portions of the nose remain normal, and between them are acne papules and newly-formed tumors. By far the most frequent cause of acne rosacea in men is the excessive use of alcoholic drinks, but every thing which favors a seborrhœa of the nose (as sexual diseases in women) may induce acne.

Diagnosis.—The disease resembles—1. *Chilblains*; these, however, come on the nose, as a rule, only in anæmic persons, especially in chlorotic girls, and very rarely in healthy men; the nose thereby becomes diffusely red, and is more shiny and swollen than in acne rosacea. 2. *Lupus erythematoses*, which likewise attacks the face in the same manner as acne; but, in lupus, the scales or crusts adhere firmly to the orifices of the sebaceous glands; in acne, papules or pustules are present at the same time, seldom scales. In lupus there is loss of substance, not in acne. The most important diagnostic mark is, that in acne we have pustules; never in lupus. It is hardly possible to mistake the disease in question for lupus vulgaris, or a tubercular syphilide, if regard is had to the characteristic symptoms of these affections.

Prognosis.—Though it is easy to remove the disease, it is difficult to prevent its return, because it comes mostly in sterile women, who are suffering from organic disorders of the genital system, or in habitual drinkers who find it very difficult to change their habits. The prognosis is most favorable in those cases in which the disease results from seborrhœa in poorly-nourished persons.

Therapeutics.—The remedies given under acne disseminata are useful also in acne rosacea, only varying the treatment to suit special conditions. Thus, for example, the enlarged vessels must be laid open and cauterized with nitrate of silver; newly-formed excrescences must be removed, and the acne pus-

tules scarified. I have used with success the emplastrum mercuriale* in these cases, as also this ointment :

R. Liquor ferri sesquichlor., 3j.
 Unguenti simplicis, ʒj.
 M. Ft. ung.

The bichloride of mercury is of service in many cases, in a concentrated solution, five grains to the ounce, especially when there is great discoloration of the skin following acne. Sometimes weak solutions are of good service; as—

R. Hydrarg. chloridi corrosis, gr. j.
 Tinct. benzoini, 3 ij.
 Aq. rosarum, 3 vj.
 M. Ft. lotio (Purdon).

[WILSON has classed acne rosacea, under the name gutta rosacea, among his eczematous affections, including eczema, psoriasis (scaly eczema), pityriasis, lichen, impetigo, gutta rosacea, scabies; this he does for the following reasons: 1. The kind of eruption, namely, an inflammatory congestion of the skin, accompanied with erythematous patches, red spots, papulæ sometimes small, sometimes large, pustules and tubercular thickening of the integument; 2. Its tendency to exudation when the pimples are scratched; 3. Its dependence on constitutional causes; 4. Its existence associated with eczema elsewhere on body; 5. Its chronicity. In further differentiation from acne proper, he mentions its almost constant appearance in middle life, whereas the former commences oftenest at puberty. "There is no disease," says he, "more amenable to treatment than is gutta rosacea, when properly understood;" and he uses tonics with the idea that it is a disease of debility, and, when these have exhausted their good effects, he says we may have recourse to the unfailing specific influence of arsenic. Local treatment he advises to be mildly stimulant, daily washing with cold water and juniper-tar, or carbolic-acid soap. He afterward refers to the stronger applications used by others. LIVING uses the following: R. Spiritus camphoræ, 3 ij; sulphuris precipitat. ʒ ss; liquoris calcis, ʒ iv. M. Ft. lotio.—L. D. B.]

[* This does not exactly correspond to our emplastrum hydrargyri, so I give the formula of the German pharmacopœia :

R. Hydrargyri, 3 iv
 Terebinth commun., 3 ij.
 Cere flavæ, 3 iij.
 Empl. plumbi, ʒ iss.
 M. Ft. unguent.—L. D. B.]

3. SYCOSIS.

Syn. *Acne Mentagra*, *Bartshne*, NEUMANN; *Varus Mentagra*, *Sycosis Menti* or *Barbæ*, *Dartre Pustuleuse*, *Ficous phyma*.—L. D. B.

By sycosis is understood an eruption on the hairy parts, principally of the face, but found also on other places, attended with the formation of papules, nodules, and especially pustules and infiltrations. At the outset tumors appear from the size of millet-seeds to that of a pea, or even larger; these develop into pustules, which dry to sharply-defined scabs, or, when the pustules become confluent, to large irregular crusts. The pustules are pierced by a hair, whose root, when withdrawn, is found to be swollen, and saturated with pus. The skin around the pustules, especially in acute cases, is greatly swollen, œdematous, and often moist, as in eczema; we have, moreover, flat, sharply-defined pustules, not elevated above the level of the skin; these likewise are traversed by a hair; later in the disease the whole bearded skin is full of sharply-defined abscesses of the size of a hazel-nut, or over. In other cases the elevations resemble broad condylomata; the crusts also vary in thickness, as the person has a thick beard or not. Sometimes the eruption disappears spontaneously, and superficial cicatrices remain, corresponding to the parts affected. When the disease has lasted a long time, the submaxillary glands are swollen.

The regions attacked by sycosis are, the hairy parts of the face, the hairy skin beneath the chin and on the neck, the parts of the nasal mucous membrane which have hairs (*vibrissæ*); the eye-lids and eye-brows, and, in rare cases, the hairs of the head and temples (especially after precedent eczema); but the rest of the head is never involved, the inflammation being confined to where the hair is thick. The same appearances as in sycosis of the face are sometimes seen in the hairs of the genitals and axillæ of both sexes.

As stated in the introduction, sycosis is one of the diseases described in the oldest times by Aëtius, Paul of Ægina, Celsus, and especially by Pliny. That other diseases were included is seen from the description of Pliny, who says that this disease attacks not only the face, but also the neck, breast, and extremities of persons in the better walks of life. ALIBERT was the first to class sycosis with acne.

Diagnosis.—Sycosis may be readily mistaken for eczema, or

a syphilide. There need never be any doubt, however, if we remember that sycosis of the face occurs only in bearded men; further, the absence of itching, and of the great moisture which is characteristic of eczema, assists the diagnosis. If, however, the skin is covered with crusts, the appearances will be the same for both diseases, and we have but the single diagnostic mark that eczema extends also to the hairless parts, while sycosis is limited to those parts provided with hair. Syphilis is distinguished from sycosis by there being ulcers left after the removal of the crusts of the former, while in the latter there are either none at all, or very superficial loss of substance.

Prognosis.—Sycosis is a curable disease, and, although relapses frequently occur during the treatment, yet the disease yields to a persistent use of the remedies given below.

Etiology.—Sycosis consists in an inflammation of the hair-follicle, with a consequent suppuration of the same, the cause of which is not yet decided. Perhaps it is from a premature development of a new hair at the base of the follicle where the papilla is located, before the old hair has fallen out; this abnormal occupation of the sac by two hairs at the same time might excite an inflammation (HEBRA). According to another view (WERTHEIM), the disposition to sycosis is explained by the diameter of the hair being too great, when compared with that of the hair-follicle. CAZENAVE believes that it comes from the use of dull razors. RAYER, DEVERGIE, and GIBERT, consider sycosis as a purely mechanical inflammation; others think that it comes from the action of heat, or from uncleanness. We have observed the disease repeatedly in very cleanly persons, but cannot give any satisfactory explanation of its origin. According to HEBRA's experience, sycosis occurs more frequently in those who do not shave:

GRUBY, BAZIN, KÖBNER, ANDERSON, and HARDY, have discovered a new species, *sycosis parasitaria*. In this country this form is of very rare occurrence. We have been able to discover the fungus found in herpes tonsurans but twice in the hairs taken from the tubercles of sycosis, although we have subjected some hairs from almost every case to microscopic examination, and have searched for the parasite in the Hôpital St. Louis and other hospitals. Around the nodules on the

hairs of which the fungus was found, there were distinct circles of vesicles, presenting, therefore, the picture of herpes tonsurans, while on the parts not hairy the circular form of herpes tonsurans was distinctly visible. (We would expect this form in coachmen, and in those who remain long in stables and moist places.)

Therapeutics.—From what has been said, the treatment of this disease must be purely local. The crusts present are to be removed with oil-dressings. If the skin beneath is greatly inflamed, and the suppurating follicles gaping, we extract with a proper forceps those hairs which are easily removed (epilate*), and then cover the skin with the unguentum diachyli albi, spread upon linen to the thickness of a knife-blade, changed morning and evening, or we employ the benzoated ointment of the oxide of zinc (unguent. Wilsonii) instead. If the number of the tubercles is considerable, we soften them with lukewarm cataplasms; when the infiltration around the follicle is great, the ung. diachyl. is used mingled with emplastr. mercur. We likewise have recourse to frictions with the green soap, or with the spiritus saponis alkalinus, also douches and vapor-baths; sulphur-ointment and iodide-of-sulphur soap, sulphuret of calcium (LOCHER), and red precipitate, are used by some. Daily shaving will essentially assist the cure, but this is not necessary in all cases. In sycosis of the nasal cavity and of the ciliæ, epilation is required, and the ap-

* STROGANOV instituted a series of experiments as to the time required for the regeneration of the hairs after their removal, also as to their anatomical relations, by carefully extracting the hairs from the backs of dogs by means of a pincette. The parts of skin concerned were cut out after an interval of from one to sixty-six days subsequent to the epilation, and observed microscopically after being previously hardened. In his experiments he has developed the fact that all the hairs are not drawn out, but most of them break at the outermost portion of the hair-follicle, more rarely at the bulb of the hair, and yet more seldom still lower down, so that the hair is completely separated from the papilla. When the bulb is extracted completely, young pigment-cells are generally formed about the surface of the papilla on the third or fifth day after epilation, which gradually extend into the follicle, finally filling it completely, as can be readily seen in the course of from three to five weeks. This layer of cells remains irregularly disposed for a long time, and the hair is developed from them very slowly. On the sixty-sixth day after the epilation no arrangement of these cells resembling a hair could be traced. When the hair is broken off above the bulb, the new hair is formed very quickly, and the more rapidly the higher up the old one was broken off. (*Centralblatt für Med. Wissenschaften*, No. 33, 1869.)

plication of the red precipitate (hydrarg. oxid. rubrum), one grain to the drachm. In these localities the cartilages are generally infiltrated. Only in the most rebellious cases do we use caustics, as concentrated acetic, chromic, and nitric acids. The knife is used only when the pus is situated deep in the tubercle.

[TILBURY FOX, WILSON, ANDERSON, SQUIRE and NAYLER, BAZIN and HARDY, GRUBY, KÖBNER and KLEINHANS, support the view of the parasitic origin of what they designate sycosis, while HEBRA and NEUMANN still stoutly maintain its non-parasitic nature. I myself am convinced of their being a parasitical form, having repeatedly discovered the fungus in the scales and hairs taken from patients suffering under this disease. I must, however, admit that in many cases, which bear all the marks of sycosis as commonly described, we cannot find any cryptogam; this can be explained in two ways: in old cases the pus acting as a parasiticide may have destroyed the vegetable growth and the disease still continue as a mere inflammation, prolonged on account of its deep-seated location, or, the disease may never have been sycosis proper, but an impetiginous eczema, or acne, both of which when occurring in the beard have much the same appearance as the disease in question. We must conclude that the parasitic form is rare on the Continent, and that the disease called by HEBRA and NEUMANN sycosis, is really of non-parasitic origin, that is, an eczema, or acne, modified by location—while that so designated by the writers above mentioned is truly parasitical and contagious, and is thought by most to be a later form of herpes tonsurans; I should add, however, that both varieties are called sycosis by most physicians, the name being quite as applicable to the one as to the other form.]

HEBRA insists on patients with sycosis shaving every day; he opens the tubercles or pustules with a knife, extracts the hairs, and applies some simple soothing ointment. FOX epilates, and trusts to parasiticides, especially bichloride, carbolic acid, and iodine. WILSON uses citrine ointment and one containing iodide of sulphur (Ḑj-Ḑij ad ℥j); also acetate of lead (gr. v. ung. ℥j) to soothe the skin and facilitate epilation. I have had the best results with epilation and sulphurous acid (*see Parasitic Diseases*).—L. D. B.]

IMPETIGO AND ECTHYMA.

Syn. *Pustelflechte*, *Eiterblasen*, NEUMANN; IMPETIGO, *Melitagra*, *Psyrdracia*, *Ecpycsis Impetigo*, *Dartre Crustacée*, *Crusted Tetter* or *Scall*, *Running Tetter*; ECTHYMA, *Phlyzacia*, *Ecpycsis Ecthyma*, *Scabies Fera*, *Blazengrind*, *Scall*.—L. D. B.

As already mentioned, we designate as pustules those eruptions in which the epidermis is elevated by pus (*see* page 44).

Pustules are of various sizes; the terms achor, phlyzacia, and psyrdracia, belong to an old nomenclature, now not used, and we name pustules alone according to their size; thus, the

size of a pin's head, a hemp-seed, or a pea, and so on. If they are the size of a lentil or over, and have elevated edges, and the contents dry to crusts, it is called *impetigo* (pyodracion); if, however, they are larger, showing a circular periphery, the purulent contents at the same time being mixed with blood, and the crusts thereby of a dark-brown color, it is designated *ecthyma* (phlyzacion).

The pustules spoken of occur idiopathically, or they are symptomatic of various inflammatory processes; they may result from injury, or the operation of irritating substances, as daphne mezereum, and croton-oil, or from the effects of temperature, causing at first sudamina, afterward blebs and pustules, and also from many other agencies acting directly on the skin. In adults we often see impetigo and ecthyma attending pediculi vestimentorum and scabies, and from friction with irritating substances; also in persons who have remained long in moist places, and after long-continued marches, also with varicose veins of the lower extremities. Pustules occur as a symptomatic affection after erysipelas, in metastatic processes, and in small-pox. Impetigo is seen in childhood as an independent disease, unconnected with any of the above causes.

According to C. HEITZMANN (*Comp. d. chir. Pathol. und Therapie*, 1869), scratching must be looked upon as the principal cause of the appearance of ecthymatous pustules. He made experiments on his own legs, with the result that pustules may be induced by scratching an already excoriated spot; they showed but little inclination to heal, on account of the frequent motions of the limbs, and gave rise to ulcerations resembling those described as varicose ulcers. HEITZMANN believes that such pustules coming from scratching will be found to be the most frequent cause of ulcers of the leg, an opinion which is supported by the fact that ulcers of the leg are not uncommonly seen in persons where no varicose veins are visible.

TILBURY FOX (*Journ. of Ent. Medic. and Diseases of the Skin*, October 1869) describes a *contagious impetigo*. WILSON and ANDERSON confirm the observation. The disease is very frequent in England.

In our experience, eruptions of impetigo certainly do occur at the same time on many children in a family, which, however, by no means justifies a belief in the contagiousness of the disease. It is far more probable that the same influences operating at the same time upon many persons produce the same result.

Diagnosis.—The fact that impetigo and ecthyma appear mostly on the lower extremities, will easily distinguish them

from other similar eruptions. But they may nevertheless be mistaken for rupia syphilitica. The following will serve to distinguish them: In syphilitic rupia the crusts are thick, generally conical, the single layers being laid upon each other like shingles; in impetigo the crusts are thin, soft, and readily loosened from their base; when the crusts are removed, we find in rupia syph. a loss of substance, i. e., an ulcer, with abrupt edges and pultaceous ground; in impetigo there is either new epidermis already formed beneath the scabs, or the skin is yet excoriated.

Therapeutics.—We first seek to remove the exciting cause. The crusts are then taken off by means of oil-dressings or baths; cold or warm water dressings are subsequently applied, or various ointments, as the unguent. diachyli, or emplast. de meliloto, or empl. fuscum,* etc., as occasion requires.

[HEBRA treats of these two diseases in a similar manner in a chapter headed "pustular eruptions," and, after a long consideration of their nature and origin, he concludes: "The pustular affections of the skin described by authors under the names Impetigo, Ecthyma, Porrigio, Achor, etc., have no existence as independent diseases." He includes all under the term pustules, which he divides after their cause into—1. *Idiopathic*, from any kind of irritation, as mechanical, chemical, or caloric. 2. *Concomitant*, which are only accessory to various diseases, as scabies, prurigo, and eczema, including those from erysipelas, and also metastatic pustules. 3. *Symptomatic*, as in the case of variola and vaccinia.

WILSON places impetigo among eczematous, and ecthyma with furuncular affections. HARDY will not separate impetigo from eczema, but gives ecthyma a separate place, making it acute and chronic, with several subdivisions; it appears irrational to BAZIN to confound impetigo with eczema, and he treats largely of impetigo and ecthyma as independent diseases, both of which, however, he acknowledges to be often symptoms of other affections. GIBERT, RAYER, CAZENAVE, KLEINHANS, GREEN, PLUMBE, NELIGAN, HUNT, SQUIRE, NAYLER, HILLIER, and TILBURY FOX, also describe these diseases separately, some of them uniting rupia with ecthyma. FOX, as we saw under eczema, lays stress upon impetigo being also a form of ec-

[* Emplastrum fuscum, much used on the Continent for boils, etc., consists of

| | |
|---------------------|-------|
| R. Camphor., | ℥ ss. |
| Picis nigræ, | ℥ vj. |
| Ceræ flavæ, | ℥ ix. |
| Plumbi oxid. rubri, | ℥ ij. |
| Olei olivarum, | ℥ iv. |

M. To be melted together till a little burned.—L. D. B.]

zema in cases where there was present a strumous or pyogenic habit of body, while ANDERSON insists that the affection in question should on no account be ranked as a disease separate from eczema.

The *contagious impetigo* described by TILBURY FOX, I had the pleasure of having demonstrated to me personally, by that gentleman, at his clinic, in the University College, London, and have since seen cases which answered to his description, which were quite different from any ordinary forms, and which I have been in the habit of classing with him as *impetigo contagiosa*—this property in them of inoculability being quite marked. I give a brief account of the disease, availing myself also of his description. It is seen mostly among the poorer classes, but may occur in any grade of society. There is some constitutional disturbance, generally slight, before the appearance of the eruption, which commonly comes first on the head or face, or possibly the hands. The disease is vesicular at first, after which purulent blebs are developed which soon dry into thin, light-colored crusts, corresponding exactly to the individual spots. The disease has no eczematous tendency to spread laterally, nor are the bases much inflamed—the vesico-pustules are not acuminate as in eczema impetiginodes, but are flat. Fox speaks of its affecting the eyes, giving them an appearance as though affected with purulent ophthalmia. As diagnostic features may be mentioned, its development always in isolated vesicles enlarging and showing a tendency to dry spontaneously after a few days; the peculiar flat scales or crusts; the appearance of new vesicles where the part has been slightly scratched, or where two surfaces occasionally touch each other, as about the neck and shoulders we will often find spots exactly coinciding with those on the chin or neck where these parts come in contact with healthy skin; the possibility of inoculating artificially any fresh surface; and, finally, the appearance of a number of cases in a family or neighborhood. The disease may, of course, coexist with other affections. Some little care should be exercised in isolating those with this malady; the strictest attention to cleanliness, and a little simple zinc-ointment (3j ad ʒj) applied after removing the crusts, will generally suffice to cure the disease; Fox recommends, as best, an ammonio-chloride of mercury ointment (gr. v ad ʒj). As the poor and ill-conditioned are for the most part attacked, a tonic treatment as well will generally be of service.

The names *impetigo* and *ecthyma* are useful to express the state of local inflammation commonly known thereby, which does not properly fall under any other heading in the present dermatological nomenclature, but, in view of our present knowledge, it would perhaps be as well to use the words only adjectively, and speak of *impetiginous* or *ecthymatous* eczema, prurigo, scabies, phtheiriasis, and so on, according as the inflammatory process is more or less superficial—this is merely employing these terms instead of the words *psudricious* and *phlyzacious*, of older writers, as expressing the character of pustules, thus using one word instead of two.

WILSON well remarks of *impetigo*, that it “is an affection of lower grade of vitality than eczema or lichen, and is met with most frequently

* in persons of cachectic habit," which is true also in a high degree of ecthyma. Patients with these diseases always require tonics, and generally cod-liver oil; the treatment given in the note to furuncle and carbuncle (page 148) applies equally well here. In dispensary practice, I give only cod-liver oil to be used externally and internally in impetigo of the scalp and face. Of course, such elements as scabies and pediculi must be first removed.—L. D. B.]

4. SQUAMOUS INFLAMMATIONS OF THE SKIN.

1. PSORIASIS.

Syn. *Lepra Willani*, *Schuppenflechte*, NEUMANN; *Psora*, *Lepra Alphos*, *Vitiligo Albida*, *Aussatz*, *Dartre Squameuse* *Lichenöide*, *Leuce*, *Dry Tetter*, *Alphos*.—L. D. B.

By the term psoriasis, we designate a disease of the skin characterized by shining, mother-of-pearl-like scales, more or less closely packed together, situated on a reddened base, from which they can be easily raised with the nail, and after the removal of which there is seen at first a pale, afterward a reddened, and finally a bleeding corium.

The quantity of scales varies with the duration of the disease, and is greatest shortly after its appearance, decreasing with its continuance; the corium does not bleed so readily after its longer duration. The quantity of scales further diminishes in proportion as the nourishment of the skin decreases, whether in consequence of general disturbance of nutrition, or from some febrile disease.

Small epidermal accumulations, of the size of pin-heads, are first seen, *psoriasis punctata*; these enlarge peripherally, and soon have the appearance of drops of mortar spattered on—*psoriasis guttata*; and in their further growth come to resemble coins—*psoriasis nummularis*. When the psoriatic eruption heals in the centre, and continues to increase centrifugally, the nummular psoriasis is transformed into a *psoriasis orbicularis*. When two or more of these circles come together, the eruption disappears between the points of union, and, by further peripheral development, variously-shaped serpentine lines are formed, which everywhere present the character of psoriasis—*psoriasis gyrata*; finally, if a large extent of skin is involved, the above forms are completely lost, and the whole surface is covered with scales on infiltrated bases—*psoriasis diffusa*, *agria inveterata*.

ANDERSON has, in addition, described a *psoriasis rupioides*; the accumulation of the epidermis here taking place in concentric rings, which are heaped one on the other in conoidal form. They resemble limpet-shells, and, from their resemblance to rupia, have been designated, by the writer mentioned, with the above name.

The locations on which psoriasis first makes its appearance are almost exclusively the extensor surfaces of the elbow and knee joints, on which they may frequently exist for years, and not be noticed by the patient until an eruption appears on other portions of the skin. The body, scalp, and face, are also frequently invaded; the scalp, however, as a rule, not until the disease has already reached some extent in other parts. We have as yet observed but one single case of genuine (non-syphilitic) psoriasis on the palm of the hand alone, while the rest of the surface was entirely free; when we saw the same case two years later, the external surfaces of the elbow-joints were attacked. Some authors describe a psoriasis of the nails, even without any accompanying disease of the rest of the body. In this the nails are yellow, thick, dry, spongy, and easily removed. There is, however, nothing to support the assumption of psoriasis when the nails alone are thus affected.

On the face, the quantity of the scales is generally small; the infiltration of the skin is also less there than on other places.

Psoriasis commonly itches only in the beginning, when the eruption makes its appearance, but this sensation is far less than in eczema, prurigo, and scabies; the eruption when fully out itches very little, or not at all. The other annoyances from the disease depend on its duration, location, and extension. The older the psoriasis, the deeper the infiltration, and the more the elasticity of the skin is lost; in old cases, there are cracks, and rhagadæ, which frequently become so deep, especially on the flexor surfaces of the extremities and on the palma manus and planta pedis, that motion causes great pain.

Diagnosis.—The diagnostic marks given will suffice in most instances to distinguish the disease in question. But there are cases which may be mistaken for psoriasis syphilitica, lichen exudativus ruber, eczema squamosum, seborrhœa, favus, lupus exfoliativus, lupus erythematodes, and herpes tonsurans squamosus.

Psoriasis vulgaris and *psoriasis syphilitica* differ in the quantity of scales; in the former being great, in the latter, small; in the former, they resemble mother-of-pearl, and are shining (from the accumulation of air between the lamellæ), in the latter, dirty-gray colored; in psor. vulg. the scales lie loosely on their base; in psor. syphil. they are firmly adherent; if the scales in psor. vulg. are removed, a bleeding corium is seen; in psor. syphil., on the other hand, it presents a pale-red infiltration; the scales here resulting from the exfoliation of the superficial layers of a syphilitic infiltration.

Psoriasis, Lichen Ruber.—In psoriasis, the eruptions are of various sizes, from a pin's head to that of a cent and over; in lichen, they attain at the utmost the size of the head of a pin, or hemp-seed. In the former, the quantity of scales is large, in the latter, small. Psoriatic efflorescences never stand in groups together, those of lichen do so. If the latter are so arranged that a large portion of the skin is covered, numerous scales are formed, which may obscure the diagnosis. In such a case we must carefully regard the periphery of the eruption, and we shall find that new papules continually appear as lichen advances, while psoriasis is extended by a peripheral growth of the existing eruption.

Psoriasis Vulgaris, Eczema Squamosum.—Between these, the quantity of scales serves as a distinguishing mark, which is generally greater in psoriasis than in eczema; moreover, the bleeding corium is found in the former, and a pale-red skin in the latter, after the removal of the scales. Eczema squamosum, as the latter stage of eczema, has been preceded by papules, vesicles, and exudation, while in psoriasis we have accumulations of epidermis alone as the primary eruption. The itching, moreover, is considerable in eczema, and slight in psoriasis, or not at all present.

Psoriasis Vulgaris, Seborrhœa.—These two diseases could be confounded only on the scalp of adults; for in infancy, when seborrhœa is most common, psoriasis is never seen. The following serves to distinguish them: Seborrhœa of the scalp, more especially the crown of the head, comes in the form of a confluent mass of crusts, while psoriasis consists of dry epidermal scales, which, however thick, always permit the recognition of a

circular form, so that the borders of the psoriatic patches are seen on the forehead and neck in semicircles. Further, psoriasis does not attack the scalp until other parts of the skin, especially the extensor surfaces of the elbow and knee joints, are affected.

Psoriasis, Favus.—The diagnosis is easy between psoriasis and favus, for in favus we have crusts, and in psoriasis scales; the favus crusts are composed of exudation, epidermal masses, and fungus; the scales of psoriasis consist of epithelial matter alone, held together by a fatty substance. The hairs in psoriasis are, it is true, less lustrous than normal, but yet are always elastic, and adhere firmly to the follicle; while in favus they are inflexible, brittle, and easily removed; and, moreover, contain the parasite within them. Even when in the beginning, or at the close of the disease, there is nothing but scales to be seen, it is hardly possible to mistake the two.

Psoriasis, Lupus Exfoliativus.—The quantity of scales is less in lupus than in psoriasis, nor is its extent ever so great. When the scales in the former are removed, we have an equally infiltrated and reddened skin, and in psoriasis a bleeding corium.

Psoriasis, Lupus Erythematodes.—Lupus erythematodes attacks, principally, the face, rarely the body and extremities. The scales, which in some cases are considerable, adhere very firmly to their bed, and, when removed, present villous prolongations on their under surface, consisting of masses of sebum which are drawn out from the follicles, either alone, or together with the walls of the same. The scales of psoriasis have smooth surfaces, and are easily removed from their seat.

Psoriasis, Herpes Tonsurans Squamosus.—In the latter, the quantity of scales is likewise less, as also the infiltration. After the removal of the scales, the skin is generally dry; fungus is found in it by microscopic examination.

Etiology.—The great number of hypotheses hitherto put forward have unfortunately not sufficed to throw light upon the causes of the disease: thus, for example, WILSON believes that psoriasis is the expression of a specific poison, which when once communicated to a generation is transmitted farther, through several. Opposed to this, we can with certainty say that the assumption of any connection with syphilis is inadmis-

sible, as psoriasis comes mostly on healthy persons, and the whole list of anti-syphilitic remedies has been proved to be completely inefficacious in this disease. Quite as little has climate, mode of living, or the use of spirituous drinks, to do with the origin of psoriasis.

ANDERSON especially insists that a certain debility of the organism disposes to this disease, and gives the history of two mothers in whom psoriasis constantly appeared whenever they nursed male children, while with female sucklings no trace of the disease was seen. He concludes, from this, that the male children drew more nourishment from the mother than the female, and that therefore the weakened condition of the mothers in nursing the former was greater, and increased the disposition to psoriasis more, than in the nursing of female children. As soon as the male children were weaned, the psoriasis also disappeared.

But in our experience psoriasis appears chiefly in healthy, vigorous persons, and disappears when the nutrition decreases, whether from sickness or other causes.

The disease is not contagious, but is transmissible from father or mother to their children.

The relation of psoriasis to other cutaneous diseases is variously given: according to HEBRA, 50: 3,000; according to DEVERGIE, 280: 1,800; WILSON, 73: 1,000; ANDERSON, 282: 4,074. The frequency therefore must be different in different countries, and amounts on the average to one in 14. The estimates also vary as to the relative frequency in the sexes:

According to HEBRA,* 23 males to 17 females.

“ “ WILSON, 23 “ “ 40 “

“ “ ANDERSON, 97 “ “ 99 “

The disease makes its appearance commonly about the sixth year of life, sometimes earlier.

Anatomy.—GUSTAV SIMON (*Die Hautkrankheiten*, page 212) gives the anatomical changes in psoriasis as follows:

“The red spots which precede the appearance of the scales are probably the result of a chronic inflammatory process, and the swelling, if this assumption is correct, comes from an inflammatory exudation in the tissue of the skin, the nature of which has not yet been investigated. The condition of chronic

[* HEBRA's book states 33 males to 17 females. The whole average, then, would be 153 to 156, or nearly an equal proportion, which would correspond with my experience.—L. D. B.]

inflammation of the cutis found in psoriasis has probably a share in the excessive scale formation, the newly-formed epidermis being in all likelihood continually separated from the corium by the newly-formed exudation. The epidermis beneath the scales, which is still closely connected with the corium, is thinner than normal, and is consequently found in a condition of atrophy."

Now, we see from the above that SIMON himself had made no anatomical investigations in the disease in question, but had nevertheless expressed the correct conjecture, that a chronic inflammation in the tissue of the cutis gives rise to the profuse epidermal production.

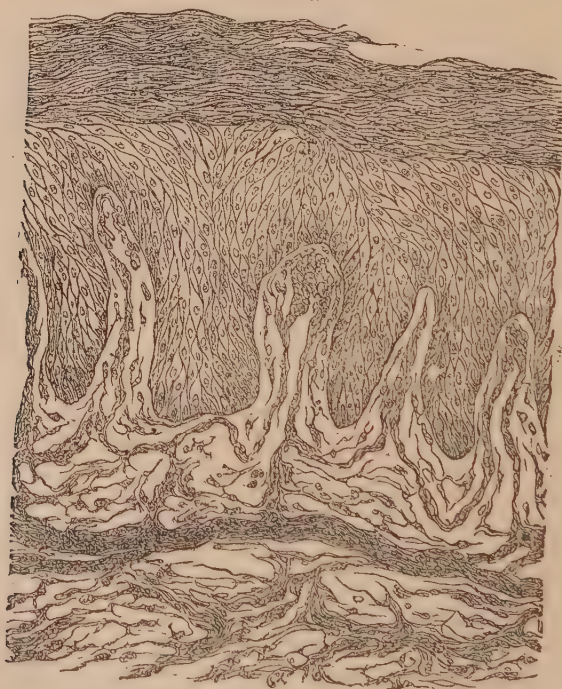
HEBRA (*Path. und Therap.*, page 285), who gives certainly a very complete description of the origin and also of the different forms of psoriasis, could find no anatomical alterations in the skin of those who had died while affected with this disease, since on the cadaver the morbid appearances had almost entirely disappeared, the red spots which form the bases of the masses of scales appearing pale on the corpse, and the accumulated epithelial masses being but loosely attached. On the other hand, the microscopic examination of the papillary layer of those places occupied by psoriatic patches showed no deviation from the normal. HEBRA was compelled, therefore, in this case to confine himself to the observation of the morbid products as they present themselves on the living body to the unassisted eye, as white epidermal masses piled together, and concludes that the scales are situated on a hyperæmic skin.

WERTHEIM has made psoriasis the subject of closer examination, and has communicated his results to the Royal-Imperial Society of Physicians. He excised portions of skin from patients with psoriasis. He found that the papillæ of the psoriatic skin were enlarged from twelve to fifteen times, both in their length and breadth; this enlargement was constant in four patients. He further found that the vessels of the papillæ have the appearance as if their enlarged tubes twisted and turned many times on their passage to the summit of the papilla, in such a manner that its body seemed almost entirely filled both in its perpendicular and transverse section. This condition, however, WERTHEIM cannot present as entirely cer-

tain, until injected preparations are made which will confirm the view; this, however, he expects, for these structures have a resemblance to sections of blood-vessels as regards their color and contour. From the enlargement of the papillæ and the expansion and distention of its blood-vessels, he concludes that some hinderance to the circulation occurs within them which gives rise to the formation of the sharply-defined psoriatic patches.

While, therefore, SIMON expresses only the conjecture that there is an inflammation of the cutis present; and while, further, HEBRA arrived at no nearer conclusion with the microscope, WERTHEIM constantly found an enlargement of the papillæ of the cutis, and conjectures that the vessels therein are enlarged.

FIG. 17.



Cell-growth along the vessels; transverse disposition of cells in the summit of the papillæ.

These various statements induced me repeatedly to excise both new and old psoriatic patches from patients, their permis-

sion being first obtained. Thin sections treated, some with acetic acid alone, some with carminate of ammonia and acetic acid, gave the same result as to anatomical condition.

I found the epidermal cells, as also the rete Malpighii, greatly developed and the papillæ enlarged, especially in older eruptions; corium, and also the papillæ, were filled with an abundance of cells. These are found in great quantity principally along the vessels (Figs. 17 and 18), but also alone; they

FIG. 18.



Epidermis and rete Malpighii greatly developed; papillæ enlarged, cell-accumulation along the vessels and in the tissue of the corium.

have many prolongations. These cells are seen especially in the upper layers of the corium and on the apex of the papillæ,

which they distend to a nodule. Whether this cellular hyperplasia comes from a division of the elements of the new tissue, or from a migration of the white corpuseles, cannot yet be determined with certainty.

If we follow an enlarged vessel of the corium and the branches given off from it to the papillæ, besides the increase of cells spoken of along the walls of the vessels, we find the small twigs which enter the papillæ gradually extending through its whole breadth, and in some cases the capillary appears twisted at the summit, so that the cells on the walls of the vessels, which in their first course had a direction corresponding to the longitudinal diameter, now at the apex have a horizontal or oblique bearing.

A section through the papillæ shows clearly the cells filling its stroma almost completely; they form a circle, in the centre of which the cavity of the vessel is seen. From this it follows that psoriasis is to be considered as a disease of the most superficial strata of the corium and papillary layer, which is accompanied with a considerable cell-proliferation, and in which the papillæ appear considerably enlarged. But these hypertrophies do not constitute the characteristic appearance of psoriasis; the same are found in general in other chronic diseases of the skin, as prurigo and eczema, but do not occur in the latter until it is of long duration, while they are found in psoriasis at the beginning. The excessive formation of scales is therefore only a hyperplasy of the cells of the rete Malpighii, which is accompanied with an increased desquamation of the epidermis.

Prognosis.—As the nature of this disease is still obscure, we are unable to obtain any permanent cure. Nevertheless, we can completely remove all the morbid changes in the skin, even when the whole surface is affected. The gain in this is considerable, for the spontaneous course of psoriasis frequently takes months and years, during which time deep alterations may occur in the skin, which are painful and troublesome. The period of relapse varies in different persons: sometimes it happens after some months, or one or two years; in others, not until after ten years.

Psoriasis is seldom dangerous to life, and only so in those

cases in which the entire surface is involved, and deep rhagades occur, and the patients are exhausted by the extent of the disease.

Therapeutics.—We will not attempt to present a list of all the remedies which have been used in this disease; and will mention only the most important of them:

1. *Internal Means.*—Ethiops mineral, graphite, tartar-emetic, sulphuretted antimony, turpeth mineral, and the preparations of mercury and iron, which have been employed in other cutaneous diseases, have been used also in psoriasis. The *anthracoli*, consisting of a solution of anthracite coal in caustic potash, given in doses from two to five grains, three or four times daily, has proved itself completely inefficacious. The various cathartics, and among them the *Hura Brasiliensis*, will, when the evacuations are profuse and the diarrhœa long continued, lower the vitality of the whole organism, and with it that of the psoriatic eruption; but, in proportion as the general nutrition improves, the eruption again increases. These methods have, therefore, but little value, as also all hunger-cures and abstraction of blood, general or local. *Zittmann's decoction*, and the internal use of preparations of iodine and mercury, are likewise unattended with success. The *Hydrocotyle Asiatica*, of which we have used the syrup, pills, and ointments, repeatedly in HEBRA's clinic, is a costly and thoroughly useless remedy.

Arsenic is rightly regarded as an efficacious remedy in psoriasis, which it will frequently cause to disappear completely, without the use of any external treatment. Especially is this true of psoriasis punctata and guttata newly developing, which we have seen disappear entirely within four or six weeks after the internal administration of arsenic. In severe cases, however, the use of external treatment at the same time will secure a good result more speedily. An inflammation is excited in the psoriatic patches by the internal use of arsenic, by which the formation of scales is diminished, and the psoriatic efflorescences fade, especially on their circumference, which finally disappear entirely, leaving only a pigmented spot. Arsenic does not prevent relapses. The preparations of arsenic most commonly used are: FOWLER's solution (arsenite of pot-

ash), PEARSON'S solution (arsenate of soda), DONOVAN'S solution (iodide of arsenic and mercury), the Asiatic pills (arsenious acid and pepper), and arsenic with opium.

Solutio Fowleri.—Each fluid-drachm contains half a grain of arsenious acid. We begin with six drops a day for adults; in a child of six years, three drops, either alone or with infusion of balm or camomile. From this dose, when it is well borne, we increase every other day by one drop, until twenty or thirty drops are given; the dose is then diminished, and, when this precaution is observed, there is no danger in the long-continued use of the remedy.*

Solutio Donovanii.— $39\frac{1}{2}$ grains of arsenious acid, $76\frac{1}{4}$ of pure iodine, and 100 of mercury, are moistened with alcohol and rubbed together; an hydriodic acid is then prepared from $32\frac{1}{2}$ grains of iodine and four ounces of distilled water, which is mixed with the previous compound, and three pounds of distilled water added. The whole mixture is then boiled until the residue weighs 1,300 grains, and is a clear, water-like fluid. Of this one drachm is mixed with three ounces of water and a half-ounce of syrup of ginger, and three tablespoonfuls given daily.†

Solutio Pearsonii consists of one grain of the arseniate of soda to the ounce of distilled water, of which 15 drops are given three times daily.

Asiatic Pills.—Arsenious acid 66 grains, black pepper nine drachms. Fiant cum gum. arab. et aq. destill. pil. No. 800.

* MAJER ALNI (*Württembergischer Correspondenzblatt*, xxx., 13, 1860) describes the condition of the urine during the use of arsenic, and contradicts the results given by ORFILA and BONJEAN, the former of whom found traces of arsenic in the urine four or five days after its discontinuance, and the latter one month after. MAJER used the following method: he introduced a stream of sulphuretted hydrogen into the urine; the precipitate formed was washed with hot and luke-warm water; one half of it was then treated with sulphuric acid, to destroy the organic matters in it, and afterward with nitrate of potash, to effect a complete oxidation of the carbon; the other half was mixed directly with nitrate of potash, and detonated in a porcelain crucible; the white mass thus resulting was again treated with sulphuretted hydrogen, and the yellow deposit, thrown down after twenty hours, was subjected to Fresenius's reduction-test. The arsenical mark was always clearly formed.

[† This formula is different from that given in the United States Dispensatory. The dose of our preparation is from five to twenty drops for an adult. We cannot recommend it.—L. D. B.]

Each pill contains 0.0825 of a grain of arsenic. Three pills are given a day, better before meals; the dose may be gradually increased, even to twelve pills. Arsenic is frequently better borne in connection with opium: thus, one grain of arsenious acid and four grains of opium with soap are divided into 16 pills; take two night and morning.

LIPP (*Arch. für Dermat.*, 3 Heft) used with success arsenic in the form of *subcutaneous injections*, one-tenth of a grain a day, in distilled water. The quantity of scales around the infiltrated spot increased; the eruption became flatter, and faded. The general symptoms which followed were, heat, loss of appetite, thirst, increased diuresis, pain in the head, dizziness, etc., which, however, soon passed away. LIPP believes the short length of time required for the treatment, and the sparing of the stomach, will recommend this method as expedient.

SIMS (*Brit. Med. Journ.*, 1869) recommends the balsam of copaiba (10 to 20 grains, with mucil. gum. arab. and liq. pot. carb.).

The internal administration of *carbolic acid* is recommended in psoriasis by LEMAITRE and BAZIN (3j cum ext. et pulv. acori calami, in pil. 60); according to my experience their effect seems to be to diminish the hyperæmia; and as, in this disease, there are also thickening, and new formation of tissue, we can readily explain why, as a rule, we find a diminution of the hyperæmic phenomena in the beginning, while the disease afterward remains stationary, even with the use of large doses, because carbolic acid has no influence on thickened tissue. Only thus can I explain why, in the more acute forms of psoriasis (*punctata* and *guttata*), in which the infiltration is less, I was able to attain success, while I have never succeeded in a complete cure, although I have administered the remedy in large doses for more than half a year; M. KOHN (*Archiv. f. Derm.*, 2d Bd.) has recorded more favorable results in the treatment of psoriasis by carbolic acid. In my practice I make use of carbolic acid, as also arsenic, in inveterate psoriasis, only to assist local treatment, having regard to the precautions mentioned. One must, however, always remember that large doses of this medicine are capable of producing other diseases (as fatty and gran-

ular degeneration of the hepatic cells, and of the epithelium of the kidneys). The way in which the remedy appears to produce its effect in psoriasis, from the experiments which I instituted (*Archiv. f. Derm. und Syph.*, 1869), is as follows (it is best seen on the web of a frog's foot): with the administration of very small doses, the circulation in the capillaries is permanently quickened, while with large doses this acceleration is noticed only at first. When large doses are given, this rapid movement is soon followed by a retardation, and even a stasis of the blood, while complete anæmia is seen in the parts distant from the web.

Local Treatment.—Water may be used warm, in the form of baths, or cold, as in the Priessnitz cure. A long continuance in a bath of the temperature of from 26° to 28° R. (92° to 95° Fahr.) has the effect to macerate the psoriatic scales so that they are readily separated from their base; and this means we employ either in the continual bath, or at the natural springs, as Gastein, Ragatz, Pfeffers in Switzerland, Mehadia, Baden near Vienna, Aachen, and Leuk. Thus the infiltration gradually disappears, and the patients are freed from their psoriasis in a more agreeable manner than by other means. The Priessnitz method,* in the form of packings, douches, and frictions, is of equal service with warm baths in this affection.

Sapo Viridis (Green Soap), Schmierseife.—℞. Lixiviæ causticæ saturatæ, ponderis specif. 1.333, ℥j, cetacei ℥ij, M. S. *sapo viridis*.

Instead of the spermaceti, lard, cod-liver oil, or cocoa-butter is frequently used. In lighter cases of psoriasis, especially in children, the *sapo viridis* is used the same as ordinary soap, or, it may be rubbed on the skin with the help of water, and be allowed to dry there.

This method (*Schmierseifencyclus*, soap-cure) is especially suited to cases extending over large surfaces, when the patient is confined to the bed. The frictions are made as follows: the patient is placed between two blankets, or, what is more simple, he puts on a woollen shirt and drawers after rubbing the whole surface with the soap, by means of flannel or a brush.

[* Described on page 175—L. D. B.]

The frictions are made twice a day for the first six days; on the seventh, eighth, and ninth days but once each, and a bath is not given until the fourteenth day. The later the patient takes the bath, the easier is it to remove the soap, the less also the tension of the skin; which latter, in case the bath is taken too soon, is so considerable that the skin seems to be too small for the patient. A solution of the soap in alcohol is also used, according to the formula: \mathcal{R} . Saponis viridis \mathfrak{z} j, alcohol \mathfrak{z} ij, \mathcal{M} . filtra et adde spir. lavandul. \mathfrak{z} j. Signe, spiritus saponis alkalinus (Seifengeist), HEBRA. This solution is especially applicable in psoriasis of the scalp and face. The frictions are made under a lukewarm douche, by means of flannel or coarse cloth.

Tar.—Three different preparations are used: *oleum fagi*, from the fagus sylvatica; *oleum cadini*, from the juniperus oxycedrus; and *oleum rusci*, from the betula alba.* The first two preparations are less costly than the latter, which, although it has a more agreeable smell, is not more efficacious.

When tar is applied to a patient for the first time, attention must be paid to its local as well as to the general effects. The former may appear very rapidly, the most common being a cutaneous inflammation which extends even beyond the border of the tarred part. The general symptoms do not make their appearance except when at least one-third of the surface is covered, and these consist in high fever, pain in the head, and vomiting of a dark fluid, dark fecal evacuations, and dark-colored urine. Although but a small proportion of cases are thus affected, we must still be on the watch for these symptoms; but the good effects of tar are so great that we need not abstain from its use on account of such accidents.

The voiding of a dark-colored urine has naturally no further significance, and is seen in every one, each time that a large portion of the surface is tarred. The urine first passed is always the darkest colored, that later is always lighter. The tar is best applied by means of a rather stiff bristle brush, and should be rubbed in quite hard, in order that it may penetrate into the follicles. Tar is employed alone or combined with

[* Of these, only the *oleum cadini*, *l'huile de cade*, has been much introduced in this country.—L. D. B.]

some of the remedies about to be mentioned; alone, in the form of tar-baths (HEBRA), thus: after the parts affected have been previously coated with tar, the patient lies in a warm bath for four hours every day, until the disease has disappeared. The tar may be mingled with cod-liver oil in equal parts, when we wish to avoid the above-mentioned bad effects; with alcohol and ether, when the hairy parts are to be treated, or when we wish it to dry rapidly. Tar is very efficacious in other diseases as well, and we shall speak of its combination with various substances under the head of the different diseases. When we wish to avoid the color, we can employ the various products of distillation, principally naphthalin or resineon and carbolic acid, of which we shall speak elsewhere.

To correct the offensive odor of the tar, the following mixture may be used:

℞. Olei rusci, ℥j.
 Alcohol,
 Eth. sulph., āā, ʒj.
 Ol. lavandul.,
 Ol. rutæ,
 Ol. roris, āā, gtt. xx. M.

Vlemingke's Solution.—℞. Calcis vivæ ℔j, flor. sulph. ℔ij, aq. fontis ℔xx. Coque ad remanent ℔xij, dein filtra. The dark-red fluid passing through the filter should be applied to the psoriatic patches by means of flannel, pumice-stone, or a brush, and rubbed thereon until the corium is seen bloody. The method is painful, and patients should, therefore, select only a small part of the skin for its application at one time.

Unguentum Rochardi.—℞. Iodi puri gr. vij, calomel ʒj, leni igni fuis, adde, ung. simpl. ʒij; this salve is applied once or twice a day to the psoriatic patches until vesicles are formed around them.

Ung. Helmondi (℞. Hyd. precip. alb. ʒj, ung. simpl. ʒj) is especially suited to psoriasis of the scalp and face, and, when quicker operation is desired, we may employ the following: ℞. Hydrarg. precip. alb., bismuth subnitrat., āā, ʒj, ung. simpl. ʒij. M.

The modified *Wilkinson's salve* used in scabies, and also resineon, has been lately used by HEBRA. The *Wilkinson* salve

is rubbed on in the same way as the green soap for several days in succession, and the patient kept between woollen blankets.

Resineon is employed in like manner in the following formula: *

R. Resineon,
 Petrolei, āā, ℥j.
 Saponis viridis,
 Axung. porci, āā, ℥j.
 Pulv. pumicis, q. s. ut f. unguentum.

Dr. PASSAVANT, of Frankfort, recommends cutaneous nutrition for the cure (?) of psoriasis, considering all other remedies as superfluous. According to him, milk, pork, fat meat, and bacon, should be prescribed. He cured a case of psoriasis inveterata, with accompanying bronchitis, completely by this method. PASSAVANT thinks that psoriasis depends on an imperfectly-elaborated blood; and, just as there is an abnormally-increased collection of scales on the outer skin, he thinks a similar collection of epithelium takes place in the lungs, stomach, and mucous membrane of the nose; all these diseases recover under the method he recommends (?) (*Archiv für Heilkunde*, 1867).

To sum up the treatment: we can succeed in psoriasis punctata, or guttata, with the internal use of arsenic alone, but in severe cases this should be used in connection with local treatment. In psoriasis of the scalp and face, frictions with the spiritus saponis alkalinus may be used, together with the precipitate and bismuth salve, which method is very suitable for children. The choice of the methods will depend somewhat on the extent of the disease, and the occupation of the patient. Thus, for example, persons with extensive psoriasis may take a tar-bath for four hours every evening, while those who wish to be sooner cured, and can devote themselves wholly to it, may go through the treatment with frictions of soft soap (*schmierseifencyclus*, soap cure). In inveterate psoriasis, friction with the solutio Vlemingkx is indispensable. Rochar'd's ointment has a more intense effect than the white precipitate.

* Resineon is an ethereal fluid, which is colorless in its fresh state, and turns dark afterward; it has been introduced by PEREIRA as a product of distillation from tar; it is very quickly absorbed, and soon imparts the odor of tar to the urine.

Any skin, however greatly affected with psoriasis, may become completely clean by means of the methods here given; and although we are not able to prevent relapses, yet an appropriate and timely management will certainly prevent a very great extension of the disease.

[WILLAN's second order of skin-diseases were named "squamæ," and included lepra, psoriasis, pityriasis, and ichthyosis; this was followed also by CAZENAVE, who still described *lepra* and *psoriasis* as affections distinct from one another, which view was also adopted by RAYER, GREEN, and A. T. THOMSON. PLUMBE, about the same time, began to recognize a similarity in the two diseases. GIBERT acquiesced, and considered them of the same nature, differing only in form; and almost all writers and teachers since that time have adopted this arrangement. ANDERSON, in his excellent monograph on this affection, locates lepra clearly as a declining stage of psoriasis, when the nummular variety is progressing toward a cure, the eruption disappearing from the centre, leaving circles. This is the *lepra* of older authors, and is now called *psoriasis circinata*. WILSON describes the disease in question under the title "alphos," and applies the term "psoriasis" to the scaly stage of eczema, making "lepra" synonymous with elephantiasis Græcorum, or the true leprosy. TILBURY FOX retains the word "lepra" for the psoriasis of our author, and banishes the latter title entirely from his list of diseases.

These attempts at changing the nomenclature of this branch are unfortunate, giving rise to much confusion, and, as there may be no limit to the alterations which individual thought may suggest, the safer way is to adopt that which is well established, if thereby we can convey a clearer idea. I speak thus particularly, because the two leading writers accessible to the English-speaking student, WILSON and FOX, differ greatly in many points, while the new classification of the German school, and the want of order in the French, but add to the perplexity. *Lepra* and *psoriasis*, then, are looked upon by a large portion of the dermatological world as stages of the same disease, which also is known under the name "*psoriasis*," and not *lepra* or *alphos*.

HARDY makes eczema, lichen, psoriasis, and pityriasis, constitute a class which he calls the "dartres," which he thus defines: "Affections of the skin, with many and diverse elementary lesions, non-contagious, but hereditary and reproduced in an almost constant manner, having a great tendency to spread, and attended usually with itching; running habitually a chronic course, they leave no cicatrices, although often presenting ulcerations." BAZIN gives us an arthritic as well as an herpetic form of psoriasis, but the only practical point involved is in regard to the treatment, the former class requiring alkalies and colchicum internally; this form, he says, has a predilection for the genitals and parts exposed to the air, head, hands, and breast, coming rarely on the elbows or knees, the places where the darts variety usually is first found.

WILSON says: "In simple or uncomplicated alphas (*psoriasis*) there is commonly no question of regulating the digestive organs and general health; the specific treatment may be commenced immediately, and the one reliable internal remedy is arsenic." His method of giving it is for the patient to take a drachm from a minim glass, in the middle of the meal, of the following mixture:

| | |
|---------------------------------|----------|
| ℞. Vini ferri, | ℥ iss. |
| Syrupi simplicis, | |
| Liquoris potassæ arsenitis, aa, | ℥ ij. |
| Aquæ destillatæ, | ℥ ij. M. |

Now, although the above mixture would undoubtedly do very many patients good, we shall, I think, have better success if we forget for a while the existence of a so-called specific, and endeavor to find out, if possible, and remove the exciting causes; given a predisposition to psoriasis, each fresh attack will very often be traceable to some error of living or habit; in one, it is over-taxation of the brain; in another, confinement in close atmosphere; in another, an exhausting dyspepsia; while there are cases pointing to the exhaustive effect of hyperlactation as the exciting cause. I think there can be but little doubt as to the clinical existence of a relation, however slight, between arthritic troubles and the disease in question, as BAZIN indicates, for we often find cases benefited more by an alkaline course, and by the occasional use of colchicum, than by any other plan of treatment—the external applications remaining the same. M'CALL ANDERSON mentions this, and prefers the carbonate of ammonia, ten-grain doses, increasing to thirty or forty grains. This, I take it, acts quite as much from its tonic properties as from any particular power it has over this disease. The alkali most used is the liquor potassæ, although the neutral acetate of potash acts at times excellently, by promoting free action of the kidneys.

TILBURY FOX says that some of his best results have been in over-worked women, from the use of cod-liver oil, with steel or quinine, or a course of the mineral acids. ANDERSON places cod-liver oil next to arsenic in the internal treatment of psoriasis, though applicable to a different class of cases. But few, comparatively, will be found to adhere to HUNT's plan of treatment, which is to discard local applications (except a little weak white-precipitate ointment), as masking the disease, and to trust entirely to arsenic, at times bleeding and purging freely, and administering antimony. He continues the arsenic a long time, and it is a question how much the spontaneous involution had to do with the cure, many of his cases having come under treatment late in the fall or winter, and are reported as cured in the spring or summer, at the time of the natural improvement or disappearance of the disease in many instances. I do not thus mean to diminish confidence in the value of arsenic, for even HEBRA pays high tribute to its value, but to guard against the sanguine hopes so often raised in regard to this remedy, and to impress the necessity of knowing and carefully consid-

ering the *natural history* of every disease we are to treat. The intelligent dermatologist, then, will carefully study his patient as well as the disease; will seek to discover the exciting cause in each attack, to remove it if possible, and to put his patient in the way of avoiding it in future; he will endeavor to discover faulty assimilation and remedy it, and to this end it will be serviceable to examine the urine chemically and microscopically in every case, oxalate of lime and the urates or other abnormal ingredients being frequently found here. If a rheumatic or gouty tendency is present, he will give alkalies and colchicum; if nervous debility, the phosphates; if over-work and poor food lie at the bottom of the difficulty, iron, cod-liver oil, and the mineral acids with bitters, will be his first prescription. With all of these we may combine arsenic, why? Even the best of physicians must answer, "empirically," because we find it is of service, the mode of its action having never yet been determined.

Quite as unanimous are most modern writers as to *local treatment*. HARDY places baths at the head of topical applications; sulphur, the preparations of mercury, and tar, being the basis of all other local means. BAZIN makes no additions, but says that the oleum cadini (*l'huile de cade*) is the remedy with which he obtains the greatest success. WILSON says: "The best curative agent in the external treatment of alphas, as far as the word curative can be applied to that disease, is *tar*." TILBURY FOX employs an ointment, composed of olive-oil, 3j; pyroligneous oil of juniper, 3ij; and adeps, ℥i, which may be used night and morning. At the hospital he resorts to creosote, gtt. vj; mercurial ointment, gr. xv; and adeps, ℥ij. He also gives the excellent caution to *avoid stimulating the skin while the disease is increasing*, for an emollient, diuretic, and aperient treatment will then give better results—an irritating treatment causing the disease to spread. ANDERSON gives pretty much HEBRA's treatment, as presented by our author; he also alludes to the value of a soothing plan of treatment when the patches are much inflamed.

The course of treatment which has given the best results with us has been, after regulating the bowels and removing as far as possible any exciting causes, the administration of arsenic in the following mixture (if the other elements are required, as they so often are):

| | |
|-----------------------------|---------|
| R. Solutio Fowleri, | 3jss. |
| Ferri ammon. citrat., | 3j. |
| Tinct. nucis vomicæ, | 3ij. |
| Tinc. cinchonæ co. ad | ℥iv. M. |
| S. Teaspoonful after meals. | |

I would say that it is not necessary to push the arsenic greatly, the good effect depending rather on its long-continued action. I seldom increase the dose, and have very rarely given enough to affect the eyes even to the slightest degree. Together with this, an alkaline, neutral, or acid diuretic mixture (as required) is often given in the interval, for a while; the following being of very general service:

R. Potass. acetatis, ℥j.
 Acidi acetici, 3j.
 Spiritus etheris nitrosi,
 Ext. tarax. fl.,
 Syr. zingiberis, āā, ℥j. M.

S. Teaspoonful in half a glass of water between meals.

Locally we employ alkaline baths (four or five ounces of carbonate of soda to thirty gallons), or frictions with an alkaline lotion (somewhat stronger) to remove the scales, after which the "tinctura saponis viridis cum pice" of HEBRA, recommended so highly by ANDERSON, as well in scaly eczema, is rubbed in and allowed to dry on. It is made as follows:

R. Saponis viridis,
 Olei cadini,
 Aquæ Cologniensis, āā, ℥j. M.

Many use the oil of cade pure, or diluted in various proportions with almond-oil, cod-liver oil, alcohol, or lard.—L. D. B.]

2. PITYRIASIS RUBRA.

As has been already mentioned, there is a form of eczema characterized by a skin reddened in large patches, and covered with furfuraceous crusts,* or scales, but nowhere excoriated; there being no itching. This form has been described by many as an independent disease, under the name *pityriasis rubra*. The affection is rare, attacks mostly the body or the whole surface, and is distinguished for its obstinacy and frequent relapses. That the disease, however, belongs to the group of eczema, as HEBRA believes, is seen from the fact that we occasionally find moist, excoriated patches on other portions of the skin, especially in the flexures of the joints.

The same treatment applies to this form as to the more acute, widely-spread forms of eczema.

5. PAPULAR INFLAMMATIONS.

1. LICHEN.

Syn. *Knötchenflechte*, NEUMANN; see Note.—L. D. B.

Various morbid processes of the skin have formerly been embraced under the name of lichen, which represent entirely different diseases; thus, eczema, impetigo, mentagra, etc., have

* It is classed here on account of the preponderating formation of scales.

been reckoned as belonging to this group of affections. The explanation used by GALEN and HIPPOCRATES—"summa cutis vitium est psora et lepra cum asperitate et levi pruritu, deteriorius quidem pruritu, psora autem et lepra levius"—does not answer to the present description of the disease.

WILLAN understood by lichen a papular eruption spreading widely, attacking adults, connected with internal disorders, and not contagious. He makes five species: 1. Lichen simplex; 2. *L. agrius*; 3. *L. pilaris*; 4. *L. lividus*; 5. *L. tropicus*. According to the description which he gives of the above diseases, lichen agrius and simplex correspond to eczema; by lichen pilaris no disease proper can be understood, but only an epidermal accumulation adherent to the hair as it emerges from its follicle, and beneath which it is cracked, this occurring mostly on the thighs; this form is seen commonly in persons to whom the frequent use of the bath is foreign; lichen lividus is a scorbutic phenomenon, and is an hæmorrhagic exudation which elevates the epidermis into a papule. WILLAN reckons also petechiæ and vibices in this category. WILSON describes a lichen planus, which he further divides into *L. diffusus*, *annulatus*, and *marginatus*; it is identical with lichen ruber. He, however, considers the prognosis favorable.

HEBRA has precised the term lichen, and given as its characteristic mark not the papules alone, but a definite morbid process which accompanies their formation; the one seen most commonly in scrofulous subjects he designates *lichen scrofulosorum*; the other, attended with the formation of papules of a particular kind, he calls *lichen exudativus ruber*.

1. *Lichen Scrofulosorum*.—This consists of small elevations, of the size of pin-heads, seldom larger, of a reddish-brown color, and standing together in groups; they are generally formed around the orifices of the follicles, and have thin, easily-removable epidermal scales on their surface. These papules commonly assume a crescentic or circular arrangement on the breast, back, abdominal and inguinal regions, but may also, though more rarely, appear on the extremities, and I have observed them even on the face and scalp in children. In many cases the disease is combined with acne disseminata, and in the inguinal region we often find pustules, whose development

from lichen-papules can be readily traced, especially in children. Such patients present other symptoms also which we designate "scrofulous," as—enlargement of the lymphatic glands and induration of the same, periostitis, caries, necrosis, and the like. In childhood, when the disease is in general most common, it is often combined with infiltrations at the apices of the lungs, whereas I have never yet met this state in adults.

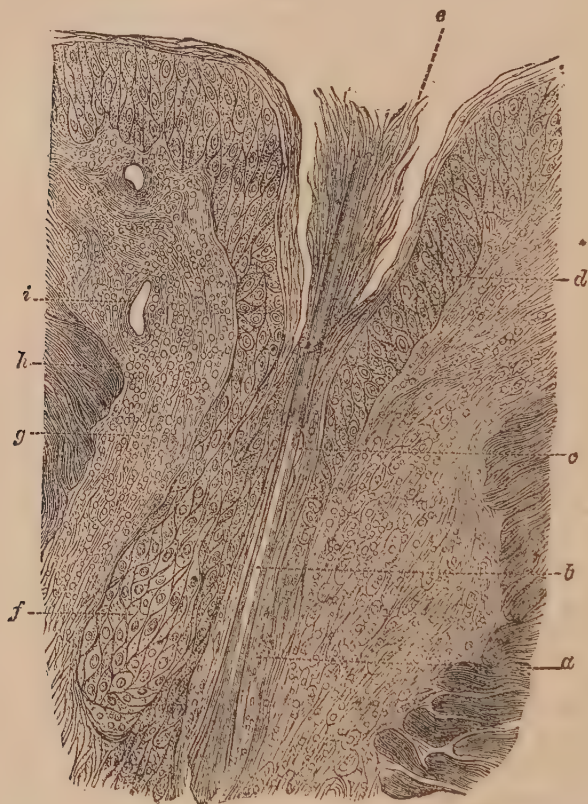
When the disease is left to itself, it disappears after a time, but makes frequent returns; the papules attain a slight height, and then gradually diminish in size, so that finally the circle of a former eruption is marked only by a few scales, and, when these fall off, a pale-brown discoloration alone is left. The disease gives no trouble, and never itches.

Lichen scrofulosorum is more common in children than in adults, and the eruption is in them far more extended; the etiology likewise presents some deviations from that in adults. As to its frequency, among one hundred adult skin-patients, three have lichen, while there are five in every hundred children with cutaneous affections. Lichen may commence as early as the beginning of the second year of life, and the papules are mostly in groups. In one case which I saw, the whole surface was covered except the lower legs, even the face and scalp. The case was that of a girl four and a half years old, on whom the disease had appeared in the form of the above-described dirty-brown papules, covered with thin epidermal scales, standing in circles or groups, and in whom no alteration could be detected in the submaxillary or other accessible glands, nor were there any symptoms of scrofulosis or tuberculosis of the mesenteric glands; on the other hand, tuberculosis was clearly present at both apices of the lungs before and behind. This is the more remarkable, as, of fifty adult patients reported by HEBRA, in no one was infiltration of the lungs discovered. These and similar cases merit especial attention, since most of those suffering from the disease in question, whether children or adults, are subjects either of scrofulosis in general, or tuberculosis of the mesenteric glands.

Finally, groups of the papules described sometimes occur on the extremities, while the trunk remains entirely free; in

adults they appear on the extremities only when the body is affected. *Lichen lividus*, i. e., purpura, is pretty frequent on the lower extremities of children at the same time with lichen scrofulosorum.

FIG. 19.



Lichen scrofulosorum.—*a*, Hair-follicle; *b*, Hair; *c*, Root-sheath, filled with cells; *d*, Rete mucosum thickened, the cells displaced longitudinally, exudation-cells between them; *e*, Epidermal mass at the follicular orifice; *f*, Sebaceous gland; *g*, Cells around the sebaceous gland and hair-sac; *h*, Adjacent normal connective tissue; *i*, Blood-vessel. (Figure after M. Kohn, *Sitzungsberichte d. kais. Akad.*, 1868.)

M. Kohn arrived at the following results in the anatomical investigation of lichen scrofulosorum: He proves that the appearance of exudation-cells, in and around the hair-follicles and their sebaceous glands, is an essential condition of the disease. At first the cells are situated around the vessels, and in the

connective tissue at the fundus of the hair-follicle and sebaceous glands, they afterward appear also within the glands and the hair-sacs; their collection is finally so great in the cavity of the follicles and glands that the enchymatous cells of the latter are crowded toward its orifice, and the sheath of the hair is separated from the follicular wall. In the further progress of the disease, the hair-follicle is distended by the mass of cells collected. The lichenous papule is formed by an infiltration of the circa-follicular papillæ, and the scale in the centre is a collection of epithelial matter in the distended orifice.

Therapeutics.—Cod-liver oil used internally and externally is a specific for this disease. Externally it is applied as freely as possible twice a day, and the patient lies between blankets in the mean time, completely naked; or in private practice, and where the patient must move around, he wears a tight-fitting woollen suit next the skin, the ordinary linen being put over this.

Internally we give an adult from half an ounce to two ounces of cod-liver oil daily, children half an ounce; larger quantities pass through undigested. It is understood, of course, that an otherwise appropriate course of nourishment, meat, etc., must be combined with this treatment.

2. *Lichen Exudativus Ruber* (*Schwindflechte*).—By this is understood a disease of the skin which makes its appearance as pale-red papules, which at first are isolated from each other, and afterward stand in groups, and finally cover a large portion of the surface, leading to cutaneous atrophy. The disease begins in the form of papules of the size of the head of a pin, which stand apart, and have a small white scale in their centre, or a depression corresponding to the orifice of the follicle. These papules, by new accessions, may involve a large portion of the skin, and are then together covered partly with white scales, and partly with greenish crusts. A papule once formed never increases peripherally, as do those of psoriasis, but the disease spreads by the formation of new papules. When the disease exists for a long period, the scales gradually become loosened, and the skin beneath is found thickened and infiltrated. It has lost its lustre and elasticity, and become harsh and easily cracked. On the face, the lines and furrows are effaced,

and the expression becomes fixed. On the hands, especially in their palmar aspect, the skin is likewise thickened, and deep rhagadæ occur, corresponding to the joints, which, if mobility remains, cause much pain. As a general rule, however, all movement is prevented, and the fingers are kept half flexed. The nails are thickened by depositions of dirty-colored nail-substance which is gradually exfoliated, to be replaced by new matter. The hairs, those of the head, axilla, and genitals excepted, retain everywhere the character of downy hairs. So long as the disease is not severe, it gives no annoyance at all, not even the sensation of itching: as it increases, however, both itchiness and considerable pain ensue. The disease runs a chronic course, frequently even through many years, and we recall but a single case which was fatal within three months.

All patients, in whom the disease is extensive, die, commonly from a general marasmus, with a gradual diminution of the nutrition. The disease, fortunately, is rare; the number of cases thus far observed, in the Vienna school, amounts to about twenty, of which I have seen one-third. We do not yet know any thing certainly as to its cause.

Anatomy.—A description of the microscopic appearances is found in HEBRA's book on skin-diseases (vol. ii., p. 66. Sydenham Society's edition), and in the *Lancet*, by HILLIER. The former found the root-sheath, which, in the normal condition, surrounds the hair as a cylinder, in this disease, to be funnel-shaped, with the apex downward, and expanding above; the papillæ were enlarged, and the capillaries dilated. HILLIER could find no other alteration than that some hairs showed great brittleness; the epidermal cells were, moreover, filled with numerous small bodies, which refracted the light, were not soluble in ether or alkalies, and which resembled spores. By the kindness of Prof. Hebra, I had an opportunity of examining sections of skin taken from a patient with the disease in question. I chose a piece of skin from the back, on which were many papules; it was hardened, and sections made shortly after which were treated partly with acetic acid alone, and partly with the carminate of ammonia and acetic acid. For comparison, I took also a healthy piece of skin from the corre-

sponding region on a cadaver. The result of the examination is condensed below.

The pathological changes involve nearly all the layers of the skin and its appendages. The epidermal cells are accumulated on each other in abnormal quantity, and contain fine granular matter in their interior. The cells of the rete Malpighii in some of the preparations were moderately increased; in others they were in much greater abundance, sending quite thick, broad, and long prolongations between the papillæ; around the latter, brown pigment-cells were collected in places.

FIG. 20.



Lichen exudativus ruber.—*a*, Dilated duct of a sudoriferous gland; *b*, Enlarged vessel with cell-proliferation; *c*, Cellular contents of a sudoriferous duct; *d*, Hair; *e*, Expanded hair-follicle with its muscular fibres.

The papillæ were enlarged, their interior filled with a coarse elastic net-work, which is more abundant than normal in the whole corium (Fig. 20). The vessels are enlarged, both in their coarser branches, and also in the capillaries (within the papillæ); in the deeper layers of the corium the arteries and veins display a serpentine course. Along the vessels there is an abun-

dant proliferation of cells, whereby they attain a considerable diameter, and completely fill the body of the papilla.

The perspiratory glands and the panniculus adiposus present nothing abnormal. The ducts of the sweat-glands, however, are trumpet-shaped, and contain numerous cells packed together in their cavity. The sebaceous glands were present in so small a quantity that not much could be learned as to their relations; they probably perish. The most interesting change is seen in the relations of the outer root-sheath (Fig. 21); this, as is known, in the normal state, consists of nucleated cells

FIG. 21.



Lichen exudativus ruber.—Hair with hypertrophied root-sheath; thickened hair-follicle with knob-like projections; sebaceous gland.

which are collected around the shaft of the hair in larger quantity than at the base of the follicle (around the root of the hair). In this disease the proportion is exactly reversed; that is, the cells are found in greatest abundance at the lower part of the

sac, and form tongue-like projections, which, consisting wholly of cells, give to the entire root-sheath the appearance of an acinous gland. The follicle is distended by the cell-accumulation, without presenting, however, any other striking pathological alterations.

I found the root of the hair at its lower extremity as if it had been cut off, expanding like a brush; the cells of the outer root-sheath were increased in quantity at the upper portion also. We must conclude that at the bottom of the follicle where the cells of the outer and inner sheaths and the cortical portion come together, not the outer sheath alone, but also the two others (inner root-sheath and the cortical portion) participate in the formation of these growths.

The muscles of the skin present another condition worthy of note. They are present in very great abundance, and form bundles which branch repeatedly, and whose diameter is quite considerable. The broader bands extend upward to the papillæ and far downward into the lowest layer of the corium, and even to the sweat-glands. To such an extent is this the case, that we are justified in the conclusion that there is in this disease an hypertrophy of the smooth muscular fibres; we feel the more sustained in this view, because, among twenty-five preparations taken from corresponding parts of healthy skin, only one specimen had so strongly-developed muscular fibres. I have repeatedly found this development of the smooth muscular fibres in other chronic diseases of the skin, as ichthyosis, chronic eczema, and elephantiasis Arabum.

Therapeutics.—The long-continued use of arsenic has a beneficial influence in this disease, for large quantities of this remedy taken for a long time essentially improve the alterations in the skin; sometimes, however, it reappears as soon as the remedy is discontinued.

The only local treatment which affords any amelioration, when the hands and feet are affected, is repeated friction with fat, or the application of some such ointment as the following:

R. Emplast. diachyl. simp. liquefacti,
Olei lini, āā, ℥j.
M. Ft. unguentum.

[Synonyms : *Papulæ*, *Tinea Volatica*, *Exormia Lichen*, *Scabies Agria*, *Dartre Furfuracée Volante*, *Papular Rash*.—I have met with many cases answering to the commonly-given descriptions of lichen which I could not class with eczema, nor with any other affection except lichen, but which did not by any means correspond with either of the diseases to which our author, following HEBRA, has restricted the name. (ANDERSON also accepts HEBRA's classification.) They consisted of an eruption of discrete papules, hard, slightly reddened, and scattered over the upper portion of the body, face, and limbs; the skin between was quite natural, but a little dry; they itched sometimes exceedingly, but there was no tendency to vesiculation, nor any exudation until they were scratched, and then the discharge was quite different from that of eczema; it dried into little thin crusts, and not the characteristic yellow ones of eczema. I am thus forced to accept the term lichen in the sense used by almost all writers, and shall briefly give some of the varieties commonly known. HARDY, placing lichen among the darts affections, would consider it as a variety of eczema, with impetigo and pityriasis, but his descriptions of the disease by no means suggest such an idea. He does not recognize HEBRA's two varieties, but follows, to some extent, the arrangement of WILLAN—the varieties of the latter being lichen simplex, pilaris, circumscriptus, agrius, lividus, tropicus, and urticatus.

Lichen simplex is often an acute affection, usually appearing first on the face and body, and presents the characters above described; each papule lasts one or two weeks, and is succeeded frequently by considerable exfoliation. The disease may become chronic by the continual new formation of papules—the papules of lichen never increase in size.

Lichen pilaris I am inclined to regard, with our author, as an epidermal accumulation from want of cleanliness; it is not marked by any of the characteristics of disease, except when long continuance has given rise to an inflammation and infiltration around the hair-follicle, when the eruption may be more properly classed with acne. There is no harm, however, in retaining the term as indicating the condition in question.

Lichen circumscriptus is when the lichenous papules are collected in roundish, defined, elevated patches.

Lichen agrius is merely an aggravated or inflamed form of true lichen, which, by scratching, may give rise to a dermatitis with pustules and exudation, thus simulating eczema.

Lichen lividus indicates a very low or cachectic state of the system; it is of a purple color, and is accompanied with petechiæ; it is of the nature of true lichen, as shown by the characters of the ordinary form being seen elsewhere, as on the arms, this form usually affecting the legs. It is very rare.

Lichen tropicus, usually spoken of as "prickly heat," is most common in Europeans residing in warm countries, or during very heated terms in temperate climates. TILBURY FOX regards it as dependent on a turgescence of the perspiratory glands, from the extraordinary demand made upon them; they being unable to fulfil the requirements, the surface

is heated, "the sweat-products are retained, and the nervous plexus of the skin is acutely disordered." He would class this, therefore, among the disorders of the perspiratory glands.

Lichen urticatus is a combination of lichen with urticaria, the papules often being surrounded by wheals, the little elevation in the centre suggesting the bite of some insect—which, however, is not the case. The itching may be intense, and consequently the results of scratching, excoriations, and pustules, may be present.

Lichen strophulus, commonly called *red gum*, *white gum*, and *tooth-rash*, is properly the lichen of infancy, modified by the delicacy of skin found here; the *strophulus albidus*, as we have seen under "Milium," is wrongfully called lichen, and relates to the small white papules formed by the distention of the sebaceous glands of the skin, principally about the face.

Lichen Scrofulosorum and Ruber (HEBRA).—I saw two or three cases of each while in Vienna, but have never met with any others like them since. TILBURY FOX recognizes the latter as a true lichen, but thinks it very rare in England. WILSON thinks it the same as his *lichen planus*, and gives four cases, and refers to having had numerous others; *lichen scrofulosorum* is unknown to him, and FOX will not regard it as a lichen, but calls it *pityriasis pilaris*, or epithelial hypertrophy, occurring in strumous subjects.

Treatment.—The treatment of the lichen here described must be conducted on far different principles from that given in the text. The lichen of most authors is an inflammatory disease, which, when acute, is accompanied with considerable general disturbance; and, when both acute and chronic, is attended with so much itching that the attention must be directed against this, if one would at all satisfy the patient. In an acute stage I have generally found great relief to be given by some such mixture as the following :

| | |
|------------------------------|-----------|
| R. Magnesæ sulphatis, | ℥j. |
| Ferri sulphatis, | ℥j. |
| Acidi sulph. aromat., | |
| Tinct. corticis aurant., āā, | ℥ ss. |
| Syr. zingiberis, | |
| Aquæ font., āā, | ℥ jss. M. |
| S. Teaspoonful after meals. | |

The burning and itching, especially at night, will be often relieved by the administration of chloral, either through the day or just before retiring—say half an hour. The wash of bismuth and hydrocyanic acid, given in the note to eczema, affords great relief. Ointments of cyanide of potassium (gr. iij to vj to the ounce), or chloroform (℥ 80 to 60 ad ℥ j), or creosote, are sometimes best. Lotions are recommended by many: R. Acidi nitrici diluti, 3 iij; tinct. opii, 3 ij; aquæ Oj. M. (LIVEING); R. Zinci oxidi, 3 ij; glycerini, 3 ij; liquoris plumbi, 3 jss; aq. calcis ad ℥ vj. M. (FOX); R. Bi-borate of soda, 3 ij; cherry-laurel water, ℥ j; elder-flower water, ℥ xj (NELIGAN); R. Acid. hydrocyan. dil. 3 jss; liquor. potassæ, 3 j; aq. rosar.

¾ vss. M. (A. T. THOMSON). Sweet-almond oil, rubbed over the surface, will give relief in more chronic cases, and, when there is little or no heat of surface, the oil of cade will assist the cure.—L. D. B.]

2. PRURIGO.

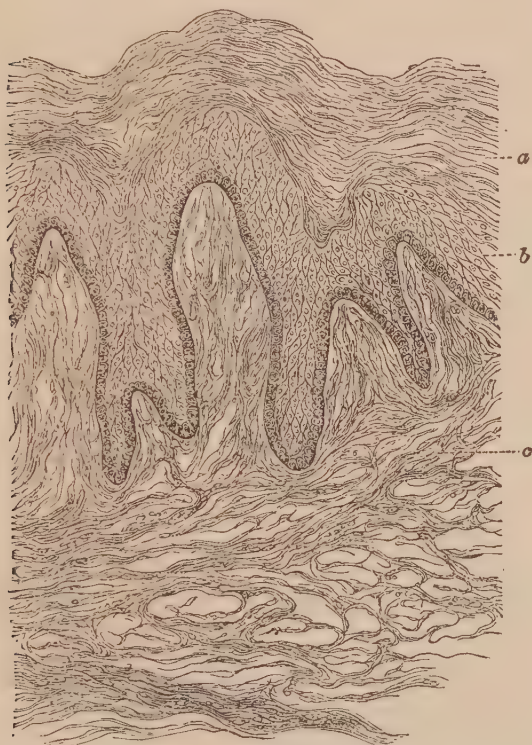
Syn. *Juckblattern*, NEUMANN; *Cnesmos*, *Pruritus*, *Scabies Papuliformis*, *Intertrigo*, *Psore Papuleuse*, *Hautjucken*.—L. D. B.

Prurigo is a chronic disease of the skin, which is characterized by the formation of pale-red, very itchy papules, of the size of a pin's head, or somewhat larger. These papules are scratched off soon after their development, and succeeded by bloody, brownish-red crusts of nearly the same size. Besides the superficial papules, which always stand singly, there are others which are deeply situated, and can be perceived only by the touch. In young patients with delicate skin we often have wheals as the result of scratching, so that prurigo may be said to be developed with the formation of papules, and wheals or quaddels. When the disease has lasted longer, other secondary changes arise, the skin becomes thickened and darkly pigmented, and pustules appear. These dry to crusts, and the epidermis is shed with a furfuraceous desquamation. The crural and inguinal glands become enlarged, and sometimes many pustules occur on the legs; the lines and furrows of the skin become deeper, and the skin in general feels rough and hard; the fine hairs are destroyed by the scratching. The disease occurs principally on the exterior surfaces of the lower and upper extremities and body, rarely on the face; the flexures of the elbows and knees, also the genitals and axillæ, remain free, even in well-marked cases. If the finger is drawn with firm pressure over the skin of the lower extremities and rapidly removed, a peculiar prickly sensation is perceived (ПЕБРА). The lighter form of this affection is called *prurigo mitis*; its appearance on circumscribed spots is designated *prurigo partialis*.

Anatomy.—The papules above described have their origin in a limited cell-proliferation within the papillary layer, together with an exudation of elements having no form, whereby the epidermis is elevated. The rete Malpighii and epidermis are hypertrophied (Fig. 22) and pigmented, and we find here, very

well developed, the stellate cells described by SCHRÖN and F. E. SCHULZE. They are found most perfect in those diseases which are accompanied with excessive epidermal or epithelial proliferation. The papillary layer and cutis are thickened by firm connective tissue, the outer root-sheath greatly developed, the hair-follicles irregularly expanded. Further studies on the cutaneous nerves must yet demonstrate whether some anatomical change in them is not the cause of this disease.

FIG. 22.



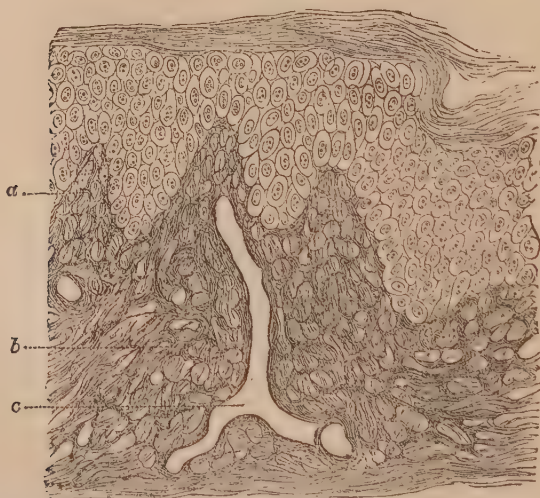
Section of pruriginous skin from the leg.—*a*, Epidermis; *b*, Rete Malpighii, rich in pigment; *c*, Thickened corium, with greatly-enlarged papillae.

R. II. DERBY, of Boston, made prurigo the subject of special study (*Sitzungsberichte d. kais. Akad.*, 1869). He found that each prurigo-papule is penetrated by a hair, whose outer sheath has a projection at the point of attachment of the arrector pili

alone. On the contrary, I can assure Dr. Derby that the projections which I described (*Lehrbuch der Hautkrankheiten*, 1. Aufl.) are on the parts of the hair-sac which lie above or below the arrector pili. These same prolongations I was the first to find also in lichen ruber, in the senile skin, and in prurigo; and, it seems much more probable to me, that they are only folds of the hair-follicle enlarged by a moderate collection of cells in the outer root-sheath, folds which come from the shrivelled condition of the cutis, and which on section appear as knob-like projections.

DERBY also found hypertrophy of the smooth muscular fibres, as I have already described them in lichen (page 241), elephantiasis Arabum, etc. The hair is also more perpendicularly placed, and has numerous round, shining cells, which are attached to its root and shaft; the capillaries of the follicle, corium, and papillæ are enlarged, the corium is distinct from the areolar tissue, and is full of interstices, within which round exudation-cells are found (Fig. 23). The meshes are formed by the serous exudation which distends the lymphatic spaces. In severe cases of prurigo, DERBY found the

FIG. 23.



Prurigo, after DERBY.—*a*, Edematous papilla, from a prurigo papule. *b*, Interstices between the connective-tissue fibres; *c*, Dilated blood-vessel.

same alterations which I have already described, and which are given in Fig. 22.

Etiology.—We cannot say any thing with certainty as to the cause of prurigo; we therefore present the various hypotheses which have been advanced; thus, various articles of diet, imperfect secretion of the urine, diseases of the nervous system, and of the blood, especially of the blood-corpuscles, are said to have an influence in producing the disease; also, an increased secretion of the blastema especially designed to form the epidermis is thought to occasion the disease (HEBRA); this, being destined to nourish the epidermis, is formed in too great quantity in the intercellular substance, and there acts as a foreign body, and irritates the papillary layer.

CAZENAVE considers prurigo as an hyperæsthesia of the skin, which is only accidentally connected with a papular eruption. Prurigo occurs not unfrequently in strumous children of highly-sensitive natures in consequence of chronic eczema.

BÄRENSPRUNG considers prurigo a *dermatic* affection, as opposed to CAZENAVE, ROMBERG, and others, who hold it to be neurotic. The sensitive functions of the cutaneous nerves, according to Bärensprung, may be diminished (anæsthesia), or augmented (hyperæsthesia). As there is a double form of anæsthesia (loss of sensation, and loss of feeling), so there are also two forms of hyperæsthesia. When there is an affection of the *nervous trunks*, we have neuralgia, that is, pain; when, however, an affection of the *skin* is the cause, there is the feeling of burning and cutting, pricking and stinging, etc.: to these belong, likewise, the sensation of itching. It appears that this latter is always dependent on some alteration in the papillary layer, and therefore ulcers and wounds begin to itch as they heal, that is, when a new papillary layer begins to be formed. Consequently those skin-diseases itch most which have their cause of external origin, as scabies and eczema; further, those which have an internal element, itch in proportion as the eruption is more or less superficial; furuncles and phlegmonous inflammations do not itch. Thus the severe itching in prurigo leads one to conjecture an affection of the papillary layer. Were it a neurosis, there would be pain and not itching, and this would bear some relation to the peripheral distribution of certain nerves. The papules form slowly and without inflammation, with an increased sensation of warmth, and as small, flat elevations. If we lacerate one with a needle, we may frequently disengage a little sac, which is an enlarged sebaceous gland, filled with cells. These itchy papules, therefore, are not inflamed papillæ of the skin, but the swollen cutaneous glands filled with epithelial cells instead of fat. For this reason we find the paper-like dryness of the skin and yellow color in a prurigo which has existed long.

The itching is certainly not rendered clear by this hypothesis.

Diagnosis.—The points above given will suffice in most cases to enable us to recognize the disease. But the entire surface of the body should be inspected and the diagnosis made from the whole picture, and not from any one portion of the skin. It is most liable to be mistaken for a long-existing scabies, especially in those cases where the burrows of the acari have been destroyed. We can avoid a mistake, however, by remembering that prurigo occurs chiefly on the lower extremities, affecting principally the legs, and that the skin is thick and sclerotic, the scrotum and penis remaining exempt; while, in scabies, the genitals are generally attacked. The diagnosis may often be obscured by the development of an extensive eczema upon an old prurigo; here the patient must be freed from the eczema by appropriate treatment before the prurigo can be recognized.

Prognosis.—Prurigo is incurable in the adult, but generally amenable to treatment in children. Its curability, therefore, depends on the age of the patient, and the duration of the disease. Any one who has an opportunity to observe how frequently prurigo occurs in children of rich as well as of poor parents, and how rare the disease is in adults, and that most of the adult cases are among the poor, can from this alone conclude the curability of the disease; otherwise it would be more frequent in adults, in the better walks of life.

It is important, therefore, to recognize the disease early, to inform the parents of its obstinacy, and of the consequences which neglect may entail, and to employ early the proper medication. All who are experienced in the treatment of children agree in this view as to the curability of prurigo. We always give an unfavorable prognosis in the prurigo of adults; in them it is only possible to ameliorate their condition for a while, but never to remove the disease.

Therapeutics.—The most important means in the treatment of prurigo are: lukewarm baths, soaps, oily substances, sulphur, tar, and corrosive sublimate. Our choice of means must be governed by the age of the patient, and his occupation, and also the form of the disease. In infants or older children we recommend the daily use of lukewarm baths; the affected portions are previously rubbed with the green soap, which is then washed off, the skin dried and rubbed with some fatty

matter. If the children are poorly nourished, we choose cod-liver oil for the frictions, by which, experience teaches us, the nutrition is greatly improved. In more vigorous children we use spermaceti with sufficient olive-oil to make a soft ointment. These frictions are made twice daily; a tightly-fitting suit of woollen is then put on and the ordinary linen is worn over this; when there are many pustules and crusts, and the patients are able to remain in bed, the continuous application of cod-liver oil is also suitable. A course of friction with green soap (as described under Psoriasis) will diminish the infiltration; Vlemingkx's solution is applicable only to the drier forms of prurigo, with papules and branny desquamation. The solution should be rubbed in while in a bath, after which the patient is tarred. Baths of corrosive sublimate are of service when there are many pustules and crusts; used in the proportion of two drachms to the bath. Frictions with Wilkinson's salve, with which the patients should be treated for at least ten days, are also suited to this state. Painting the skin with tar, and lying for three or four hours in a warm bath (making the so-called tar-bath), are found to be serviceable; likewise soda-baths (two pounds to the bath). Adults can only expect a transient amelioration on each occasion, but infants and children may be entirely freed from prurigo by their continued use; but the baths should be continued for some time, even after the skin appears healthy. The same natural springs spoken of under Psoriasis will afford relief in this disease also.

BÄRENSPRUNG rejects irritating remedies in the treatment of prurigo; local anæsthetics, as chloroform, are also useless. On the other hand, cold baths and water-dressings afford comfort and ease, and lukewarm baths diminish the increased sensibility, as do also bran and steam baths. Anointing the skin with emollient pomades, and rubbing it with bacon, have been found of service as palliatives. BÄRENSPRUNG designates sulphur and tarry preparations as the true remedies for cure (?), and also the corrosive sublimate. Mild cases of prurigo are often cured by sulphur-baths and ointment. BÄRENSPRUNG obtained remarkable success in obstinate cases with baths of corrosive sublimate. Every other day, or at longer intervals, the patient takes a bath of 28° R. (95° Fahr.), in which there are

two drachms of the sublimate; six such baths are generally sufficient for a cure (?). The absorption of the mercury is transient and the effect principally local. A wooden bath-tub must be used for this purpose, and not one of copper or zinc, for the chemical decomposition would not only injure the vessel, but also render the remedy inefficacious.

BELLENCONTRE recommends petroleum in connection with alkaline-baths.

LEMAIRE and M. KOHN advise carbolic acid internally.

[*Pruritus*.—Most authors either discard the term pruritus from their vocabulary, or they employ it synonymously with prurigo. HEBRA, WILSON, and TILBURY FOX, have done good service to dermatology in retaining the word, but in separating it and its application entirely and clearly from prurigo. WILSON says, "Pruritus is a state of itching of the skin;" which exactly expresses the distinction required, i. e., *pruritus* is a *state*, and *prurigo* is a *disease* of the skin. HEBRA says, "It is only in prurigo mitis and formicans that morbid changes in the tissues of the integument precede and cause itching; while, in the other so-called species of the disease, this sensation is supposed to depend on some as yet unknown cause. . . . I only admit as 'prurigo,' what WILLAN named *P. mitis* and *formicans*, and call every thing else simply itching of the skin—*pruritus cutaneus*."

Pruritus, therefore, is now accepted as synonymous with itching, and this state of the skin may be the result of many very different causes. The most simple form is that very frequently felt after a full rich meal in one of sedentary habits, another transitory manifestation is the itchy, tingling sensation experienced in the head, and sometimes over the whole body, after violent exercise, as running. Still more marked is the pruritus attending the circulation of effete products in the blood-current, as in jaundice, or accompanying habitual constipation, or from want of cleanliness, or, again, from a reflex irritation, having its origin in some disorder of the alimentary canal. But much more marked, and far more annoying, are the *local varieties*, each generally dependent on some local affection, though it is by no means possible to discover the cause in every case, nor to relieve the sufferer. These topical forms of pruritus will be found described later on, under Neuroses.

Our author, and HEBRA regard the formation of the papules the primary condition, the itching being later, and in consequence of the irritation thus set up. In this I believe they are alone, though A. T. THOMSON speaks of the papules being difficult to discover even with a lens, remarking, however, that they are always obvious to the touch when the finger is passed over the part; this being the case in the true prurigo so accurately described by HEBRA. He says: "In every case the earliest appearance is that of *sub-epidermic papules*, as big as hemp-seeds, and recognized rather by touch than by sight, since they rise but little above the level of the skin, and do

not differ from it at all in color." I am convinced of the existence of this as a disease *sui generis*, and can bear witness to the fidelity of the description given by NEUMANN and HEBRA—for I saw many cases in the latter's clinic, of all ages, some very young, and recall seeing five cases presented at one lecture, one of them very marked in a lad about ten years old, who had been in the hospital a number of times for the temporary relief of his tormenting disease. I have had no difficulty in recognizing the affection, which has repeatedly come under my notice since.

DAMON ("Neuroses of the Skin") still confounds pruritus and prurigo, making the former an early stage of the latter. Says he: "The eruption is preceded by the itching; which latter is the immediate cause of the papular condition of the skin." TILBURY FOX also considers the changes in the skin in prurigo to be secondary to nerve-disorder, and states that prurigo is a disease of advanced life. BAZIN, HARDY, RAYER, CAZENAVE, HILLIER, NELIGAN, SQUIRE, and others, follow the same school; and WILSON, while he separates distinctly pruritus from prurigo, still says of the latter: "There is nothing that deserves the appellation *papule* until the pruritus begins."

The error, I think, comes from confounding the disease in question with three distinct conditions: first, local pruritus depending on many causes, and in which no papules are seen except secondary eczematous ones as the result of the continued irritation of scratching; second, the pruritus attending the presence of parasites, animal or vegetable; and third, the senile pruritus accompanying the physiological changes taking place in the skin with advanced life, as described fully by our author later on. Prurigo, of course, can coexist with each and every one of these states, but, as a disease, it is always one and the same in every case.

HEBRA gives a most dismal picture of the patient afflicted with prurigo, and gives no very encouraging plan of treatment for this malady, which he considers incurable. HUNT says, "It is certainly curable in all its forms and complications," and his treatment is most heroic. In some cases, which he denominates inflammatory or febrile, he bleeds, leeches, gives antimonials and drastic cathartics, supplementing these with a protracted course of arsenic; he acknowledges that other cases require cod-liver oil, and iron. He adds: "There is no truth in the whole circle of medical science more vividly impressed on my own mind than that, under proper management, arsenic is an effectual remedy for this disease." He recommends also Turkish baths. BAZIN bleeds in certain sthenic cases.

Opiates internally but increase the itching; a large dose will procure sleep, but of a very unrefreshing nature, the patient scratching even in sleep. More relief can be obtained from chloral, given from half an hour to an hour before undressing, sometimes in pretty large quantities. Although local applications are not of very much service, I will give a few formulæ which may be tried: \mathcal{R} . *Opil*, gr. viij; *creosoti*, $\mathfrak{M}\mathfrak{x}$; *ung. simpl.* \mathfrak{z} ij. *M.* (NELIGAN); \mathcal{R} . *Sod. carb.* \mathfrak{z} ss; *succi conii*, \mathfrak{z} j; *aq. sambuci*, \mathfrak{z} j. *M.* (FOX); \mathcal{R} . *Morphiæ sulph.* gr. vj; *boracis*, \mathfrak{z} ss; *aq. ros.* \mathfrak{z} viij; *M.* (*pru-*

ritus vulvæ, MEIGS); ℞. Potass. cyanid. gr. v; cocci, gr. j; sulphuris, potass. bicarb., āā, 3 ss; ung. simpl. ℥j (ANDERSON); ℞. Tinct. nuc. vom., tinct. digital., glycerini, āā, 3 ij; aq. ℥vj (FOX); ℞. Hydrarg. bichlor. gr. iij; acid. hydrocyan. dil. 3 ij; mist. amygdal. ℥x (A. T. THOMSON); ℞. Olei cadini, ol. oliv. camph., glycerini, āā, 3 ij. M. (DURKEE); ℞. Potass. chlorat. ℥ss; morph. sulph. gr. iv; glycerin ℥ij; aq. font. ℥iv. M. (DAMON).—L. D. B.]

C. TRAUMATIC INFLAMMATIONS.

In these we include all inflammations which have their origin in mechanical, chemical, or thermal influences, whose peculiarities lie in the causes which produce them—that is, entirely in their etiology—while the course and result of such inflammations always follow the same laws as govern inflammations in general.

a. DERMATITIS TRAUMATICA.

This comes from the operation of mechanical force, as a blow, which causes redness of the skin, hyperæmia, exudation, inflammatory swelling, and extravasation.

A frequent form of this inflammation is the so-called *erythema traumaticum*, resulting from pressure and friction of articles of clothing, bandages, etc., a reddening of the skin, which is only transient, and disappears as soon as the evil which produced it ceases. Hyperæmia cannot be considered as a disease proper; by erythema traumaticum, we rather understand that inflammation which involves circumscribed portions of the papillary layer, and is attended principally with a serous exudation. The so-called inflammatory œdema, and also the superficial formation of vesicles and blebs, which arise from continued pressure, as from rowing, tight boots, and badly-fitting trusses, belong to this group. All these inflammations disappear without the formation of scars, even when there is loss of substance. To this group belong those chronic erythematous inflammations which are seen on some persons from long-continued pressure and friction, and which correspond to their several occupations; thus, in writers, on the extensor surface of the elbow, in shoemakers and tailors, on the buttocks, also on those places where an article of clothing presses for

a long time, as around the loins in women where the skirts are attached. This chronic inflammation induces a continual hyperæmia and infiltration of the cutis, and is of significance to the dermatologist, for many eruptions, such as the pustules of small-pox and scabies, are found in greatest abundance on such places; also acari and pediculi choose such spots for their abode.

Abrasions, Excoriations.—To the forms of traumatic cutaneous inflammations are to be added also the so-called excoriations. These are losses of substance which come from scratching with the nails. These may affect either the horny layer or extend into the rete Malpighii, or even into the corium. They are either moist, or the epidermis exfoliates in scales, or the exudation dries to crusts, which are brownish red or even black when there is blood effused.

The form of the excoriations varies in different diseases, and depends in every case on the kind and manner of the scratching. Thus the excoriations in scabies are generally small, roundish, and correspond to the papules, and are found mostly on the upper half of the body; in prurigo, the excoriations are of the size of pin-heads, sharply defined, and of dark-red color, corresponding to the lacerated prurigo papules, and occur principally on the extensor surfaces of the extremities. The excoriations attending pediculi are various: while, at first, they are but few in number, subsequently, when the pediculi have long infested the body, the scratches are very numerous; the patient tears himself until blood is drawn, and the body is covered with brown and red crusts, some round, some linear, which, on falling off, leave superficial, white, shining scars. These excoriations are found mostly on the shoulders, around the neck and loins, that is, in those regions where the lice remain in the folds of the shirt or clothing. Repeated hæmorrhages leave behind them the dark coloring-matter of the blood (hæmatoidine), which is gradually transformed into pigment-granules, and thereby gives rise to the varied discolorations of the skin.

The **therapeutics** of excoriations consists in removing the cause of the itching, where this is possible. The excoriations then heal of themselves.

b. DERMATITIS VENENATA.

Various chemical substances acting on the skin result in inflammation, with redness, swelling, and the formation of vesicles or pustules; to this class belongs the action of vesicants.*

c. DERMATITIS CALORICA.

To this group belong burns and frost-bites. These forms of disease, which result from the effect of a very high or very low grade of temperature, present phenomena which do not differ in the main from inflammations arising spontaneously; they are characterized principally by their localization to the portion of the skin immediately affected. Burns and frost-bites present, in general, analogous features, each according to the severity of the inflammation. Thus, when the skin is reddened and swollen with hyperæmia, we speak of *combustio* and *congelatio* of the first grade; when the epidermis is ele-

* NAUMANN (*Prager Viertel-Jahrschrift*) has made some experiments worthy of note on the mode of operation of vesicatories, whose employment is continually becoming less frequent in the practice of medicine. The ischiatic nerve in frogs was dissected out, and the free portion of the leg, remaining in connection with the body alone by means of the nerve, was irritated with electricity, irritants, and warm water. The tone of the whole vascular system, the rapidity of the blood-current, and the force of the heart, were thereby considerably diminished. He made similar observations on the bat and on man. The experiments, which were also studied with the sphygmograph, gave the following results:

1. The action of epispastics is reflex, that is, through the agency of the central organ. They diminish the force of the heart and arteries (the pulse about one-third); slight irritation augmented the activity. The effect of cutaneous irritants lasts some time after their application, in proportion to the extent and duration of the excitant; in healthy men for half to three-quarters of an hour after it has been removed.

2. The relaxation of the pulse, which occurs after a severe irritation of the skin, may be greatest during the irritation, or not until after it has ceased.

3. The exciting effect of a relatively weak cutaneous irritant remains also for some time after the cessation of the cause, but a relaxation likewise occurs in consequence, only it comes much later, and in a much slighter degree than after the employment of a severe irritant.

4. From an intense irritation of the skin we have always, after a longer or shorter period of warmth, a lowering of the body temperature, which often does not reach its limit until more than a half-hour after the cessation of the provoking cause.

5. This interval of warmth is very variable; the cooling often happens even during the irritation, and often directly after its removal.

vated in the form of blisters, as the second grade; and when the skin is more or less destroyed in its substance, we have the third grade. In their course alone do burns differ considerably from the effects of cold, in that the former generally run an acute course, and the latter, on the contrary, a chronic.

1. COMBUSTIO.

Syn. *Verbrennung*, NEUMANN: *Dermatitis Ambustionis*, *Ambustio*, *Brûlure*, *Burns*, *Scalds*.—L. D. B.

Burns may be caused by any bodies which radiate much heat (SCHN, *Allg. Med. Zeitung*, 1864), whether they are solid, fluid, or gaseous. To these belong the sun's rays, fire, heated or melted metals, boiling fluids, explosive powders, and chemicals. The results are various:

1. According to the *grade of temperature*; molten metals are more destructive than boiling oil, and the latter more so than boiling water.

2. According to the *duration of the operation*; if a flame comes in contact with the bare surface of the body, the results are less severe than when the clothing is burned and cannot be quickly removed.

3. According to the *extent of surface* involved; burns of a low grade, but extended over a large portion of the surface, are on the average more dangerous than burns of a high grade and confined to a small part.

4. According to the *consistency of the heated fluid*; the thicker it is, at the same temperature, the greater is, therefore, its capacity for heat; it also adheres to the surface longer, and, the evaporation being slower, the effect is naturally more severe.

5. According to the *organization of the affected part*, and *its function*; or, according to the condition of the patient: the results from burns are different when a callous portion is injured than when an equally large spot on the back; young, delicate, and irritable persons, succumb much easier and quicker than vigorous men.

First Degree.—Temperatures over 30° R. (99°.5 Fahr.) produce hyperemia of the skin, and the greater the elevation, and the longer it acts, the more does the hyperæmia tend to exudation.

After the cause has ceased to operate, the hyperæmia gradually subsides, and the epidermis is exfoliated. Hot water, intense heat of the sun, and the like, frequently produce these effects. The redness resembles that of erysipelas, but always remains confined exclusively to the portions upon which the excessive temperature has operated. It is accompanied with severe sensation of burning.

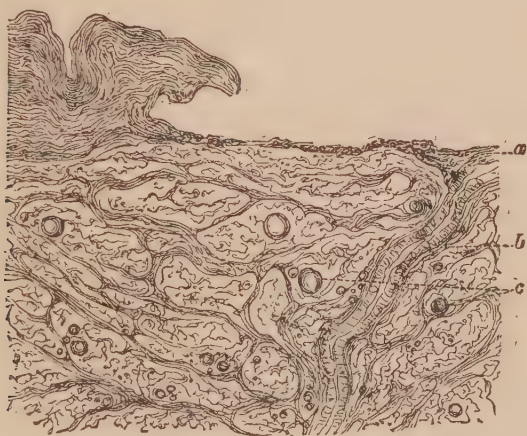
Second Degree.—When a temperature of from 60°–80° R. (167° to 212° Fahr.) comes in contact with the skin, for some time, the quantity of the exudation increases, and the epidermis is elevated in the form of blebs. The thicker the epidermis is, the harder it is to produce blisters: bullæ are formed quickly in places where the epidermis is thin, in a half to one hour, and they soon rupture; the uplifted epidermis shrivels, and is generally replaced within eight to fourteen days.

BIESIADECKI (*Sitzungsberichte d. kais. Akad.*, 57 B., II. *Abtheil.*), in recent burns of the first and second degree, found the vessels dilated, and serum exuding into the cutis and into the mucous layer; young cells of the latter, which were adherent to the cutis, were drawn into bands, and ultimately into fine threads, in which the nuclei of the former cells ceased to be recognizable.

Third Degree.—Finally, any temperature over 80° R. (212° Fahr.) will destroy the skin, either in part or in its whole thickness. This disorganization is preceded by a coagulation of the albumen in the tissues; it may affect the external layers alone, or include the entire membrane. The denuded cutis is seen variously colored, according to the depth of the burn, pale white, dark brown, or black, and may be moist, or dry and withered. The amount of pain likewise depends upon the depth of the destruction; the more of the papillary layer which is left, the more severe the pain. Moreover, the extent of injury cannot be judged, as a rule, until after the crust has been exfoliated (BILLROTH). If, now, the papillary layer is preserved, the papillæ of the injured portion are visible as red points on a white ground (rete Malpighii); in such cases the formation of new skin follows rapidly (fourteen days to four weeks); if, however, the papillæ also are destroyed, the wound presents a net-like appearance, each white spot surrounding the base of a pa-

pilla (BILLROTH); in this case, also, cicatrization takes place speedily. But, when the whole papillary layer is destroyed, reparation requires much longer time, and the process begins at the periphery, and proceeds very slowly. The appearance of the burnt portion varies according to the intensity of the burn. Generally the epidermis, rete Malpighii, and papillary layer, are transformed into a homogeneous, dark, shiny mass, the corium is thereby considerably contracted, the sebaceous glands and hairs are destroyed, and the sweat-glands appear to be crowded toward the surface; the fat-cells of the panniculus adiposus lose their oily contents, the membranes in some places containing fatty crystals, while the fat itself is disseminated through the corium in the form of small granular masses; the direction of the blood-vessels is clearly recognized by dark-red lines with rusty, brown-colored contents (scorched blood). Finally the skin may become of such a nature that one cannot distinguish the crisped, charred human skin from a burnt crust of bread.

FIG. 24.



Burn, third degree.—Two papillæ: *a*, Charred epidermis, rete Malpighii, and papillæ; *b*, Duct of a sudoriferous gland; *c*, Exuded fat-cells.

Prognosis.—The most important point of consideration in the results of burns is their extent. Burns, even of the first degree, may be fatal when they are very extensive, and when only two-thirds of the body are affected; those of lesser extent

recover, as a rule, very rapidly. Burns of the second degree, may also run their course without danger, but a bad prognosis must be given when a large part of the surface is involved. Burns of the third degree are dangerous, when large portions are charred; and it may be said, in general, that, when one-third of the surface is burned, the patients die. This course may possibly be modified when the seared parts have small islets of uninjured skin within them. The fatal event is caused by so large a part of an organ, of such importance, being rendered completely incapable of performing its functions. Collapse may occur immediately, the patient lying stupefied, somewhat as in poisoning by gases from coal, death ensuing within forty-eight hours after the injury. At the necropsy we find congestion of the brain, lungs, liver, and kidneys. When the patients survive this stage, intestinal catarrh sometimes comes on in the second or third week, with severe febrile movement, also ulcers of the large intestine, to which the patients succumb. Deaths result from nervous shock, intestinal or renal hæmorrhages (in rare cases, from Bright's disease), and, in a later stage, from pyæmia. It frequently depends on the prevailing epidemic, whether burns even of a slight extent terminate fatally or not.*

*ROSER makes four principal types of the process of repair, according to the depth of the injury: 1. Simple reproduction of the epidermis; 2. A reticulated granulation with rapid epidermal formation; 3. Granulation and cicatrization from the deeper strata; 4. Granulation and scar-formation from the exposed connective tissue, together with cicatricial distortion of the skin.

1. The reparation takes place rapidly by the reproduction of the epidermis itself.

2. When the burn has extended somewhat deeper and has formed an eschar, we shall find after its removal a granulating surface, which presents a peculiar web-like appearance, with small, red granulation-points projecting from a white or yellowish ground, which is of epidermal nature. The deeper ones between the papillæ, or perhaps between the orifices of the hair-follicles, or sweat-glands, still possess epidermis, and these epithelial portions of tissue form a net-work around the single granulations. The new cuticle starts from these thousands of centres, the small granulations subsiding, and the epidermis as it were spanning or bridging over them; the healing thus takes place very rapidly over the whole surface.

3. The deeper the burn has extended, the less of this epidermal matter there remains; and so much the more difficult is the recovery. After the separation of the eschar, the deeper layers of the skin must be first engaged in a preparatory or vascularization process. The granulations, which now form, acquire an epidermal covering from the sides of the wound, and not until this has entered upon a stage of condensation does the formation of the cicatrix begin.

Treatment.—In burns of the first degree cold water alone is required; in those of the second, the bullæ should be preserved as long as possible, and their bases alone should be punctured in order to evacuate the serum, because the epidermis affords a good protection against the air, whose action upon the bare papillary layer causes pain. If the corium is exposed to a slight extent, we may use dressings with lime-water and olive-oil, equal parts.

Glycerin, which has been recommended in burns which are granulating, causes much pain during its application, and does not diminish the subsequent sensibility. Collodion likewise increases the sensitiveness of the wounds, and, when it dries, the granulations beneath are seen to be of a vermilion-red color; it is not a useful application. Preparations of lead have been tried, but without success.

SAVAGE and SERAIN recommend a mixture of equal parts of collodion and castor-oil as a coating for the injured part. After its application with a fine camel's-hair brush, a white, elastic, semi-transparent pellicle is formed, which resists the action of external influences longer than any other covering, and completely protects the part from the access of air and irritating fluids. The pain, on its first application, is quite severe, but subsides very soon, and a comfortable feeling succeeds. This remedy can be used in burns of all kinds. The application must be repeated often in the day, according to circumstances, until a thick and durable covering is formed.

The application most to be recommended is *cauterization*, with equal parts of nitrate of silver and water. This is applied once a day with a lint-brush; the eschar thus formed affords protection from the painful action of the air, and the scars left from the cauterizations are generally very supple, and less disfiguring than those from other remedies, which is of importance, especially in burns of the face and in the vicinity of the joints.

In burns of the extremities, *irrigation* acts well. The most

4. If the burn involves the whole thickness of the skin, the repair takes place much more rapidly, but with greater cicatricial disfiguration, because the connective tissue is less thick, and far more disposed to contract. Other factors must also be taken into consideration, such as the inflammation of the surrounding parts, the powers of life of the subjacent connective tissue, and the individual relations, condition of the blood, etc.

simple arrangement for this is the following: The extremity is placed on a piece of rubber-cloth, which extends over the edge of the bed, and an upright, holding a vessel with a stop-cock and tube, is attached to the bed; the vessel is filled with lukewarm water, the cock opened, and the water allowed to flow continuously over the affected extremity. The water washes away the pus and prevents absorption (?), the patient is thereby spared the pain of change of dressings, and the new skin is formed more rapidly. The *continual bath* is far more convenient. The simplest form is a tub, with a framework and a hair mattress upon it; still better is that constructed after HEBRA's plan, which consists of a proper bath-tub with a framework in it, provided with broad bands, upon which the patient rests, and which may be raised out of the water by a windlass.

Burns which are not very extensive recover in the continual bath very quickly, and with little pain. But extensive burns terminate quite as fatally in the water as out of it. This perpetual bath is especially of good service, as we shall see hereafter, in certain chronic skin-diseases, either as simple water-baths or with the addition of medicaments. It may not be out of place to present here some experiments which have been made on the action of the skin in the bath, and also on its absorbent power.*

* B. RITTER (*Archiv der wissensch. Heilkunde*, 2. 1867) presents some experiments on the behavior of the skin in the water:

1. A secretion of gases takes place from the skin during a bath, and, as the carbonic acid and nitrogen given off are soluble in the water, they pass directly from the skin into the fluid of the bath, when the secretive power of the skin is not suspended by too low a temperature. 2. The separation of epidermal matter is not a physiological, but a mechanical act. 3. No secretion of albumen takes place into the fluid of the bath; carbonic acid and nitrogen alone, therefore, are to be considered as true products of elimination which the skin yields to the bath; while epithelium, salts, and albumen, are only accidental ingredients. As to the absorption by the skin from the fluid of the bath, this takes place by way of osmosis. 4. All absorption presupposes as a necessary condition the imbibition by the diosmotic membrane. 5. The operation of the osmotic interchange stands in inverse relation to the thickness of the interposed membrane, and therefore the skin does not take up the fluid of the bath. The beneficial effects of bathing, therefore, consist not in the absorption of medicaments, but in the reciprocal equalization of the body temperature of the bather, when it is higher or lower than natural, and the temperature of the bath, and the result of this equalization is a feeling of general comfort. At first the water acts as an irritant upon the sensitive nerve-fibres and the vaso-motor nerves; the next result is contraction, and then dilatation of the cuta-

Lately, envelopment with cotton, and oil-baths, have been recommended in burns. It may be mentioned that, in burns on the hands and feet, strips of linen soaked in oil should be laid between the fingers and toes, in order to prevent the raw surfaces in contact from uniting.

In burns of the third degree, the same treatment as described is demanded after the eschar has separated.

[The strength of the patient must always be sustained after burns of any extent, and the pain calls loudly for relief. These indications are met by the administration of opium in warm brandy-and-water, and this should be repeated often.

When burns or scalds are not very extensive, the oxide-of-zinc ointment, with a little morphine, is one of the best possible applications. Flour dusted on thickly makes a good protection from the air; this may then be covered with a layer of cotton or wool, kept in place by a bandage. WILSON speaks of a paste made of common whiting to the consistence of cream; also, when there are excoriations, of a liniment of olive-oil and white of egg, one part to two. Carron-oil (*linamentum calcis*) is a common application. RAYER advises the application of cold or even ice-cold water as soon as possible to burns, and, when there is much suppuration, ointments of acetate of lead or carbonate of zinc.— L. D. B.]

neous capillaries with hyperæmia and elevation of temperature; the respiration and pulse are at first quickened, and the latter afterward to an equal degree retarded.

MURRAY THOMPSON (*Vierteljahrsschrift f. pract. Heilkunde*, Prag. 3, 1862) presents some very interesting experiments concerning the absorbent power of the human skin. The question, whether, in warm baths, medicinal substances are absorbed or not, has never yet met with a satisfactory solution.

ABERNETHY and FALKNER experimented in 1797, and concluded that substances may be absorbed by the skin from baths. BRACONNOT found that the quantity of the urine was always increased after a bath, and that it always was neutral, whether it had had an acid or an alkaline reaction before. MADDEN noticed a constant increase of the weight of the body to the extent of five drachms after a bath, and, as did also HENRI, an absorption of iodide of potassium when added to the bath. HOMOLLE ascertained that acid urine lost its acid reaction after a bath, and also that soda was absorbed. CARPENTER showed the absorption of the coloring matter of some flowers, turmeric, and madder. CHEVALLIER and PETIT demonstrated that the urine became alkaline after a bath in Vichy-water. HEIDLER maintained, in opposition to LEHMANN, the absorption and transition of salts into the blood during the use of mineral baths. SEGUIN, CÛRIE, and LEHMANN, deny the absorption of medicinal substances from baths; DURAND-FARDEL leaves the question undecided; THOMSON, after careful experiments, determined that the assertions as to absorption from baths have been overrated, and that it takes place only exceptionally, but that certain substances may be taken up in the form of salve.

2. CONGELATIO.

Syn. *Erfrörung*, NEUMANN; *Dermatitis Congelationis*, *Pernio*, *Gelatio*, *Frost-beule*, *Engelure*, *Chilblain*, *Frost-bite*.—L. D. B.

The action of a low grade of temperature produces various changes on the skin, according to the intensity of the cold, and the duration of its operation; these we designate by the name of frost-bites (*congelatio*).*

* MITCHELL, T. A. POUCHET, SAMSON, OGSTON, BECK, RICHARDSON, WEIR, CRECCHIO, and WERTHEIM, have all made interesting experiments as to the manner in which cold operates on organic tissue.

RICHARDSON found that when a portion of the body provided with nerve-elements is subjected to a temperature (by means of ether) of from 8°–9° Cent. (47°–49° Fahr.), a feeling of cold ensues, and hyperæmia, which was followed by a sensation of warmth. A lower grade made the part white, and the surrounding tissue red, the white being insensible, and the red burning severely—the former resulting from the compression of the nerves and vessels, from the stiffness of the tissue, the latter from the congestion of the blood-vessels. With the cessation of the cold, the vessels are again filled, and sensation returns. These phenomena occur after different lengths of time in different animals. In the cold-blooded, the frog especially, they appear very quickly, and in a second the whole extremity becomes pale. Age, constitution, and locality, have likewise an influence on the rapidity of the action of cold. In young, vigorous persons the vascularization has a longer duration, but the reaction appears sooner. In weak or old persons the effect on the nerves follows immediately, and the tissues freeze; parts which move much, as the hands, resist the action of the cold more than those which remain quiet.

POUCHET found the blood-corpuscles shrunken and notched, the nuclei generally free; the thawing is therefore dangerous to life because these altered blood-cells enter into the circulation (?). He thus gives his results:

The first phenomenon of the freezing of a part is, the contraction of the vessels so that the blood-corpuscles cannot enter them; they become irregularly shaped, lose their nuclei and their central depression. If partial freezing has taken place, and gangrene ensues, the life is preserved if but few of these altered blood-corpuscles have entered the circulation. Recovery takes place more quickly when the part is slowly thawed, than when more rapidly.

CRECCHIO found the blood-corpuscles of frogs and guinea-pigs opaque. There was a retardation of the circulation in the vessels of the frog, also a contraction of the same, so that finally no corpuscles at all could pass. The larger vessels contract but little; they acquire a serpentine course, a dark color, and are congested with blood. When the cold ceases to act, the small capillaries are again filled. The nuclei are set free in from half an hour to two hours. The vaso-motor nerves are first irritated by the cold, and then paralyzed, so that finally dilatation of the vessels occurs. The innervation is also suspended, as shown by the electric current. CRECCHIO denies the occurrence of the blood-corpuscles described by POUCHET; he could not discover them either in the heart, liver, or lungs; it may be that the freezing was continued too long. Frogs whose extremity he froze, and then ligated, lived, while those which were not ligated, died between one and eight days; from which he con-

The first event in every case of frosting consists in the continued contraction of the vessels, followed gradually by a dilatation. All are not exposed to the action of cold to the same degree, different persons being variously susceptible.

Frosting of the first degree consists of hyperæmia, stasis, with serous and plastic exudation. The skin is thereby of a livid or purple color, swollen and itchy. There are many who, as soon as the thermometer falls to 2° – 4° R. (36° – 41° Fahr.) above zero, immediately suffer from frosting of the nose, hands, and feet. Such persons are seldom entirely well (ИЕБРА), they are either chlorotic girls, or anæmic and scrofulous persons. These affections from the action of cold, of the first degree, we call *frost-bites*, *chilblains*, or *perniones*; their contents consist of a brownish or bloody serum, and they may result in ulcers; they are most common with the occurrence of a cold, damp atmosphere, and are attended with unbearable itching. Frosting of the second degree consists in the formation of bullæ; when a severe inflammation or mortification of superficial portions of skin results from the too rapid thawing of frozen parts, atonic ulcers of various depths result, which are remarkable for their slow tendency to heal. The third degree, finally, happens, when, after a long continuance in a very low temperature, the circulation of a member (the nose, fingers, toes, penis) is completely checked, and the part becomes gangrenous, and is separated from the sound skin by a line of demarcation. We learn of the presence of sensibility by pricking with a needle, which will also reveal the depth to which the gangrene has extended. The flowing out of clear blood will also give us information in this respect.

cludes that in the first case the absorption of the gangrenous tissue was prevented. Guinea-pigs whose frozen limbs were amputated remained alive, while frozen extremities, not cut off quickly produced death. The rapid death of those which were frozen and quickly brought into a higher temperature, may be explained by the fact that the internal organs (heart, liver, lungs, and brain), already congested, were again rapidly distended with blood. The participation of the nervous system is shown in fatal cases by the annoying itching, the sensation of drowsiness, and insensibility, which also precede gangrene. Thus, many of the French army in Russia died with the symptoms of catalepsy and epilepsy, and many of those who returned to France were hemiplegic. The senses of taste and speech are frequently altered for a long time after recovery from freezing.

WERTHEIM found a considerable diminution of the temperature of the subcutaneous cellular tissue, and an increased secretion of carbonic acid.

Treatment.—In acute frostings of the first degree, an antiphlogistic treatment is suitable—cold-water dressings, bathing with Goulard's extract, or frictions with snow, etc. The chronic form, namely, chilblains, is far more frequent, for which innumerable remedies have been used.

Applications of ice or snow suffice in many cases to cure frost-bites in a short time. According to our experience, a space of about fourteen days, at least, is necessary for recovery in acute cases; but after this some protection against the cold must be employed; the best is, to envelop the part with strips of adhesive plaster. This is especially useful in the chronic form of frosting, the pressure causing the œdema to disappear: it is also well to make friction on such places frequently with some unguent. The various vegetable and mineral acids have been employed, as citric, nitric, pyroligneous acid; also chloride of calcium; painting the part with solutions of nitrate of silver, tincture of iodine, collodion, camphor, and opodeldoc (*linimentum saponis camphoratum*), has been tried; also various substances containing ammonia, as guano and glue. BILLROTH recommends salves of zinc.

In freezing of the second degree, the blisters should be ruptured, and the ulcers cauterized with nitrate of silver.

In that of the third degree, the dead portion should be removed as soon as possible.

[HEBRÁ well remarks the difficulty of removing chilblains, when the person still continues his occupation, and places himself in a position similar to that in which he acquired them. To restore the tone in the parts affected, WILSON says one of the most useful remedies is a liniment composed of two eggs, white and yolk, two ounces of spirits of turpentine, and two ounces of distilled vinegar, shaken well together; this may be used weaker by the addition of more vinegar, or more stimulating by the addition of cajeput, or ammonia, or made anodyne with laudanum, camphor, or chloroform. Another prescription of his is: *R. Liniment. camph., ℥ij, liquor. ammon., tinct. opii, āā, ℥j. M. Ft. liniment.* RAYER used decoction of marsh-mallows, or poppy-heads, and Goulard's extract, in the more inflammatory stages, and advised as preventives repeated frictions with salt-and-water, wine, spirits of camphor, ordinary spirits, tincture of benzoin, or a solution of an ounce of alum in a pint of water.

The ulcers resulting from chilblains are sometimes pretty deep, and always slow to heal. Resin-ointment, alone, or with equal parts of turpentine, is highly recommended.—L. D. B.]

CLASS III.

HÆMORRHAGES.

EFFUSIONS of blood into the tissue of the skin happen in two ways: either in consequence of a rupture of the blood-vessel (*extravasation*), or from the exit of red blood-corpuscles, without rupture—*diapedesis*. The latter method was first demonstrated beyond doubt by S. STRICKER; this observer was enabled, under the microscope, to see the red corpuscles in the living frog, at first crowding into the walls of the capillaries, and then gradually passing outward distorted, and at last appearing entirely without the wall of the vessel. PRUSSAK produced this *diapedesis* more abundantly in frogs and rabbits by injecting a solution of salt into the skin, thereby causing an artificial scurvy.

Hæmorrhages are either *spontaneous*, that is, the result of an affection of the blood or of the blood-vessels (typhus, scorbutus, variola, morbilli, and scarlatina hæmorrhagica), or *traumatic*, coming from an injury, which gives rise directly to a rupture of the vessels (bruise, or cut).

Hæmorrhages take the form of—1. *Petechiæ*, small, punctate extravasations; 2. *Vibices*, or stripes; 3. *Ecchymoses*, larger red spots; and, 4. *Ecchymomata*, tumors. To discover whether a red discoloration of the skin is produced by hæmorrhage or inflammation, we press upon it with the finger, when a hæmorrhage will not disappear, but a spot caused by inflammation will vanish and return again when the finger is removed.

But few of the hæmorrhages are dependent on special diseases, as scurvy; as a rule, they are commonly phenomena ac-

accompanying inflammatory processes, and may make their appearance in various forms; thus, for instance, the vesicles of herpes and pemphigus, the papules of lichen, and the pustules of ecthyma, may be attended with hæmorrhages, and the serous or purulent contents mingled with blood. Such effusions are favored by the so-called scorbutic condition of the blood, by scrofulosis, and in general by a depraved nutrition of the whole system. Their appearance is further assisted by the stasis occasioned by continued standing and walking; finally, by direct injury, which we have learned to consider of etiological moment in ecthyma and impetigo, is also an exciting cause.

All circulatory derangements which produce stasis in the venous capillaries may readily induce hæmorrhages; this is known to be very frequent in valvular affections of the heart, when the septum cordis remains open, or the duct of Botal is pervious. The blue discoloration of the skin (*morbus cœruleus* of the old authors) points to serous stasis, and in such cases inflammatory exudation can very readily be transformed into hæmorrhagic. Transient stases and hæmorrhages into the skin take place also in pregnancy, during parturition, and in *tussis convulsiva*.

The forms of the hæmorrhages vary in different diseases. They appear in spots in *morbus maculosus*; as papules in *lichen lividus*, *peliosis rheumatica*, and measles; in the form of tumors in *erythema nodosum*; as bullæ after injuries* and as vesicles in *purpura variolosa*.

The hæmatine of the extravasated blood undergoes various changes of color, and remains in the blood-corpuscles as small granules, which cluster together and form a dark spot; the color of the skin thus becomes of a brownish red, or the hæmatine is transformed into crystals of hæmatoidine, which gives rise to a variety of color in the skin.

* HEBRA denies the existence of sanguineous bullæ, that is, of those in which the epidermis is elevated by extravasated blood; for when blood, as such, is poured out into the corium, or under the epidermis, without the rupture of the latter, it coagulates and stiffens, and quaddels are formed corresponding to the quantity of blood effused. In children whose skin is very vulnerable, after exhausting disorders, as a long-continued whooping-cough, we often find effusions of blood elevating the epidermis in bullæ. I have a picture executed by Dr. HEITZMANN, in which sanguineous bullæ appeared in great quantity on a child six months old.

It was formerly thought that a diminished proportion of fibrine in the blood was the cause of certain forms of purpura, especially in the scorbutic; but BECQUEREL proves that there is rather a want of plasticity or coagulability. The blood is very rich in alkaline salts in scurvy. He believes that we can produce purpura by the administration of great quantities of alkalies. The urine also contains a superabundance of phosphate of magnesia.

Purpura Simplex.—Sometimes, in well-nourished persons, the use of certain medicaments (bals. copaib.) produces hæmorrhagic spots from the size of a pin's head to that of a pea and upward, attended or not with fever, and which generally disappear again within a few days.

Purpura Papulosa (Lichen Lividus of Willan).—The epidermis is elevated in the form of red papules, mostly on the lower extremities, especially on the back of the foot; they are most frequent in scrofulous, cachectic persons, and those suffering from lichen scrofulosorum at the same time.

Purpura Traumatica.—Here belong extravasations of blood which result from mechanical injury, as a blow; they occur most frequently on the prominent portions of the body, and such as have a bony substratum. The hæmorrhages are generally sharply defined, corresponding to the cause producing them. The larger ones are called ecchymomata; the effused blood passes through various changes of color; the skin becoming at first dark blue, violet, then brownish red, later greenish, and finally yellow, and then the extravasation disappears completely. In rare cases, suppuration ensues, and blood is mixed with pus, giving the so-called blood-abscess.

Purpura Rheumatica (Peliosis Rheumatica).—After the existence of pains in the joints, especially the knees, for two or three days, with depression, loss of appetite, and disturbance of the stomach, deep-red and pale spots appear, first on the lower extremities, and subsequently on other parts of the skin; those which are at first frequently bright red afterward turn livid, and gradually fade, finally disappearing with various changes of color (green, yellow). Œdematous swelling occurs around the joints, which, from the pains present at the outset, may be readily mistaken for articular rheumatism. Sometimes there is albumen in the urine. The duration of the disease varies between fourteen days and several weeks, many persons being

attacked anew in a few hours after they leave the horizontal posture. Young persons between four and six years, as also those between twelve and twenty years, are most frequently attacked. The disease preserves an annual type, that is, those who have once suffered from it are again attacked in the spring and fall. Erythema papulatum, gyratum, urticans, and also herpes, appear at the same time with this form of purpura: so it would seem that the same causes, as yet unknown, are at the bottom of all these diseases.

Purpura Hæmorrhagica, or Morbus Maculosus Werlhofii.—

In this, small punctate specks of the size of the head of a pin are seen over the whole skin, bright or dark red colored, which are generally accompanied with a simultaneous affection of the mucous membrane of the mouth; they are especially abundant on the lower extremities; hæmorrhages from the internal organs are not rare at the same time (intestines, kidneys, and lungs), also from the gums and the mucous membrane of the nose. The causes are the same as in scorbutus, the form of the spots alone giving them a different name.

The *prognosis* is unfavorable in this disease; a fatal termination is generally induced by hæmorrhage from the inner organs.

Scorbutic ulcers are seen principally on the lower extremities, on the palate and gums, but may also come on other parts of the body; they are the immediate result of a dyscrasia, the scorbutic, producing subcutaneous effusions of blood. They are characterized by their bluish, lax granulations, while around the ulcer is a dark, livid area. The secretion is a thin, serous pus, mixed with blood; the edges are flabby, œdematous, and infiltrated with blood. This ulcer spreads rapidly, and readily leads to caries; cicatrization occurs symmetrically from the border; the scars left are thin, purple, and shining.

Bloody sweat, namely, effusions of blood from the capillaries into the sweat-glands, is a rare affection. It occurs most readily where the epidermis is very thin, as at the root and sides of the nails, on the neck, at the edges of the nose, on the inner surfaces of the thighs, and on the arms. The blood dries in drops. The condition may last several hours, and be repeated at varying intervals; the disposition to it may last for years,

or even through the whole life. The age of childhood and period of puberty are especially favorable to its appearance. Determining causes are found in intense heat, severe muscular exertion, and vicarious menstruation.

WAGNER (*Arch. für Heilkunde*, 10. Jahr, 4. Heft) found the following pathological condition in the petechiæ which were produced by scurvy: The hæmorrhages were irregular, and lay in the loose tissue, between the firm bundles of connective tissue of the upper part of the corium, mostly removed $\frac{1}{30}$ " from the rete Malpighii, seldom reaching entirely to it. They consist occasionally, or in places, of red corpuscles yet preserved; mostly, however, of a molecular mass with scattered fat-molecules, and here and there small, red, shining pigment-granules. The epithelium of the skin, the glands, and the hair-follicles, were in most places normal. The epithelium, however, was uniformly red colored where the hæmorrhages were especially abundant in the corium, but nowhere were there red blood-corpuscles around or between them. Sometimes epithelial cells containing blood-corpuscles were seen.

Treatment.—In the treatment of purpura rheumatica, we recommend the horizontal posture, and water-dressings, with the addition of vinegar; in other forms of purpura, the causes producing them must be treated. Internally, ergot, eight to ten grains daily, is recommended (HENOCH, BAUER); also ferrum sesquichloratum.

CLASS IV.

HYPERTROPHIES.

By hypertrophy we understand a persistent increase of substance of an organ or a part of an organ, without its function being influenced. The augment of volume takes place either as an enlargement of previously-formed elements (*true hypertrophy*), or by increase in the number of the same (*numerical hypertrophy* or *hyperplasy*, ROKITANSKY). The hypertrophy occurs from a greater supply of nutrient materials, as after stasis and increased activity, or from a deficient absorption after preceding inflammation. It may likewise result from various irritants acting directly, especially when they produce a chronic inflammation. In many families an hereditary disposition to hypertrophy exists. We are interested especially in *hypertrophies of the skin*, which we will consider in order; some of them might justly be reckoned among new formations, no clinical or microscopical ground being yet known why they should be placed in one more than the other class.

A. HYPERTROPHIES WITH THE EPIDERMAL TISSUE PREVAILING.

1. LICHEN PILARIS.

The disease thus designated by WILLAN, as has already been said, does not belong to the forms of lichen, for the affection is not the result of a morbid process, but is simply an immoderate accumulation of epidermal matter, forming papules around the orifices of the hair-follicles. The disease consists of small elevations of the size of a pin's head, either of the same color

with the rest of the skin, or somewhat darker, in which the epithelial masses are collected around the orifices of the hair-sacs, which latter contain a hair wound up in their interior. SIMON designates these formations by the name *acne vulgaris*, because, according to his investigations, the stoppage of the hair-follicles is caused by masses of sebum. There is no doubt that in some cases the sebum, and the accumulation of epidermal matter, both contribute to the formation of the papules.

The location of the eruption is generally the anterior surface of the thighs, but it may occur on other parts of the body as well, and even the whole surface of the skin except the face may be sprinkled with these papules. They are seen mostly on those who bathe but little, so that the epidermal masses, which in a normal condition fall spontaneously, or are removed by the friction of the clothing, are accumulated around the orifices of the follicles, finding a point of support in the hairs themselves, and so produce papules.

Lichen pilaris may be mistaken for lichen exudativus ruber, lichen scrofulosorum, or a papular syphilide.

We must first emphasize the fact that the disease in question is seen principally on the outer surface of the thighs, and therefore can be mistaken for any thing else only when it affects the whole surface. The following points may serve as diagnostic marks: After a long continuance of lichen exudativus ruber and lichen scrofulosorum, the papules come in groups, while those of pilaris are always isolated; the deeper changes also in the skin, as the formation of scales, and absorption, never happen in the disease in question. The dark-colored base of syphilitic papules will serve to distinguish this affection completely from a small papular syphilide.

Treatment.—This consists in rubbing the skin with soap, and the use of warm baths.

2. TYLOSIS.

Syn. Tylooma, Schwiele, NEUMANN; Callositas, Callus.—L. D. B.

This is a yellow or greenish-brown hypertrophy of the epidermis, adhering firmly to the skin, but little sensitive, and useless for touch. It consists in an increase in number of the epidermal cells, whereby the skin acquires a horny consistency

while the cutis remains normal. They are most frequent on those places where the skin lies near to bone, and are therefore seldom seen on muscular portions of the body. Callosities result from pressure and friction, but only in case these agencies are intermittent, for, when they operate continuously, atrophy of the skin results. They are found especially in those who work with the hands a great deal, and occupy characteristic places in the various handicrafts; thus, shoemakers have them on the right hand and left thigh, from the leather band around the hand, and the repeated hammering on the shoe resting upon the knee; callous formations are seen also on the hands of female operatives, likewise on those who play the violin and harp. The development of the callus is generally preceded by repeated inflammation and even by the formation of bullæ. When portions of the skin having tylosis are irritated by an immoderate exertion in labor, abscesses may form, and pus accumulate beneath the callosity, causing most acute pain. We should not wait for a spontaneous opening; the pus should be evacuated by the knife, as soon as it is discovered. The hypertrophied cuticle is generally exfoliated in the course of the healing of the abscess. Tylosis is sometimes developed spontaneously, principally on the palm and foot-sole, during the age of puberty. These, as a rule, disappear again of their own accord between the ages of twenty and thirty.

Treatment.—The greater part of these thickenings can be endured without inconvenience, and they even serve as a protection against the injury which might otherwise be done the papillary layer by the occupation of the patient. It is only when those affected with them are about to cease from their former pursuits, or when inflammatory signs develop beneath them, that we employ any of the means here given for their removal. The epidermal masses may be excised with the scissors or knife, and compression afterward made with strips of adhesive plaster; or, potassa or other caustic may be repeatedly applied. When pressure is entirely removed from a callous spot, it gradually disappears, and in this must our success in treatment depend.

3. CLAVUS.

Syn. *Leichdorn*, NEUMANN; *Ecphyma Clavus*, *Hühnerauge*, Cor, *Durillon*, *Corn*.—L. D. B.

A corn is a callosity, which projects conically into the cutis, and beneath which the cutis is thinned, and the papillæ usually atrophied, but in some instances the latter are hypertrophied. The apex of the horny portion, internally, toward the corium, is frequently divided, and in the cleft lies the rete Malpighii. Like the cutis, the sweat-glands beneath the clavus are also atrophied. Soft corns on the inner surfaces of the toes have the same anatomical structure as in other places. The bursæ found beneath corns are not caused by the latter, but are found on the toes in great number in the normal condition. The most common place for corns is, as is well known, on the toes, also on the dorsal and plantar surfaces of the feet; they are frequently present in such numbers that walking gives the greatest pain. They are caused by pressure and friction of the coverings of the feet.

Treatment.—Many panaceas have been recommended; the best applications, however, after obtaining proper-fitting shoes, are, the various softening plasters, either emplastrum mercuriale or emplastrum diachyli, used after the corn has been cut off; rings of wool are also serviceable for protection; some recommend to touch them with a solution of nitrate of silver, nitric or chromic acid. C. HERTZMANN advises the following: After a warm foot-bath, the skin around the clavus is seized between two fingers of the left hand, the corn elevated, and removed by one cut with curved scissors firmly pressed on it. The hollow thus produced is itself a protection from pressure. When, in four or five days, this hollow is again filled up by the elevated centre, the operation is repeated, and, after two or three repetitions, the corn is permanently removed, painlessly and without drawing blood.

[DAMON ("Structural Lesions of the Skin," Philadelphia, 1869) gives from the French of Vernois a curious list of the places occupied by callosities according to the business or profession, and urges the study of the position, form, and cause of these lesions, both for the purpose of obviating them, and also because such knowledge may be of service in medico-legal evidence in cases of doubtful identity, or where these appearances are alleged as marks of external violence. HEBRA, in his clinic, continually points out these structures on the patients before him.]

DAMON gives *tylosis* as a synonyme for clavus, or corn; HEBRA, however, applies *tyloma* to callosity and omits the word *tylosis*. WILSON treats of the two affections under one, and makes all the terms synonymous, he and FOX both using the word *tylosis* for the larger form of *laminated* corn.

Tylosis differs from clavus in not being confined to the epidermis, but being associated with hypertrophy of the corium as well; corns originate in callosities, the atrophy of the papillary layer of the derma being the result of pressure. This atrophy, THOMSON states, can reach nearly through the whole corium, and even the fat may disappear from the subcutaneous tissue beneath the corn. SIMON presents this well in a plate, showing a lamellated epidermal structure, beneath which the corium is depressed and its papillæ obliterated. T. NELIGAN says that most of the corn-plasters contain carbonate of potash, which softens the epidermal layers. Caustics may be of service in hardening the corn, so we can cut it without bleeding. HILLIER recommends nitrate of silver for soft corns, or dusting with oxide of zinc. The toes should be kept apart by cotton-wool. WILSON applies spirits of camphor to soft corns after washing at night.—L. D. B.]

4. ICHTHYOSIS.

Syn. *Fischschuppenausschlag*, NEUMANN; *Xeroderma ichthyoides*, *Fish-skin Disease*.—L. D. B.

By this name is designated a disease which is characterized in part by a moderate accumulation of epidermal matter, and in part by an hypertrophy of the papillary layer and thickening of the whole corium, with an alteration in the cutaneous glands. The simplest form of the disease is *ichthyosis sebacea*, which is properly a seborrhœa (see page 71). In this variety we find consistent masses of sebum deposited on the ridges of the skin.

The scales of true ichthyosis may be thin, and mother-of-pearl-colored, adhering firmly in the centre, while the periphery is free, and arranged in polygonal patches, bounded by the furrows formed in the hypertrophied papillary layer, the nacreous ichthyosis (*ichthyose nacrée*, ALIBERT); or, the epithelial masses are heaped on one another, dark-colored, and likewise arranged in polygonal shapes, ichthyosis serpentina or cyprina (*ichthyosis simplex*); or, again, the epidermal growth may form spines, within which the lengthened and narrowed papillæ extend, branched many times (*ichthyosis hystrix*, or *hystricismus*, *ichthyosis cornea*, *porcupine men*). The color of the scales depends upon their quantity and the duration of the disease: at first they are white—later, greenish; then brown; and finally black. The disease generally begins on the outer aspect

of the extremities, and spares no part except the flexures of the joints, the genitals, and the face. The disease is described as congenital, but the ichthyosis of new-born children is not exactly the same as that of adults, for, in the former, the papillary layer does not appear enlarged, and the epidermal layers have quite another appearance. HEBRA gives it the name of *ichthyosis sebacea neonatorum*; or, *scutulatio seu incrustatio*, according to STEINHAUSEN. Children thus affected die a few days after birth. LEBERT describes this form as *keratosis diffusa epidermica intrauterina*.

Ichthyosis is developed, as a rule, between the second and third year of life, and advances especially in those who bathe infrequently; the accumulation of epidermis increases, the cutis hypertrophies, and cracks are formed which give pain with every movement. In rare cases ichthyosis remains limited to small portions of the skin for years, and forms moderate depositions of dark-colored epidermal cells along the distribution of certain cutaneous nerves.

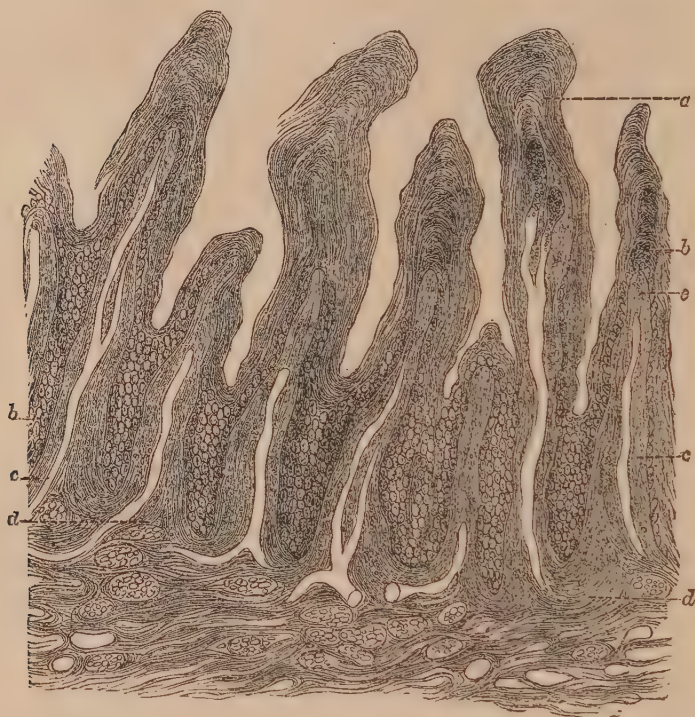
Etiology.—The causes of this malady are as yet but little known; it is certain, however, that the disease is transmissible from both father and mother. It is true that cases occur where some children of a family inherit ichthyosis from their parents and others not.

Some authors affirm that the disease consists in a quantitative and qualitative alteration of the glandular secretions of the skin; others believe that it is caused solely by an hypertrophy of the epidermis, which may depend on an increase or only a retention of the sebaceous secretion between the lamellæ of the epidermis, which subsequently dries (BÜCHNER); it is also asserted that the affection results from a qualitative change in the plasma furnished by the cutaneous capillaries, as a consequence of which there would often be at the same time an abnormal secretion of the glands of the skin, and a fatty degeneration of a portion of the epithelial elements (SCHABEL). The epidermal cells, having undergone fatty degeneration, serve to connect those which have remained normal, or those undergoing the same process, and assist in forming the ichthyotic epidermal lamellæ, together with the accumulated secretion of the glands.

Anatomy.—The papillæ are enlarged, abundantly infiltrated with cells, the vessels considerably dilated, the cutis thickened, and its connective tissue condensed into bands. A perpendicular section through ichthyotic skin shows the epidermal layers

enormously increased, consisting of many lamellæ heaped upon each other; the Malpighian layer between the papillæ is greatly developed, hypertrophied. In marked cases the epidermis is in

FIG. 25.



Section of an ichthyotic skin. After M. KÖHN (*Archiv für Dermatologie und Syphilis*, 1869) —
 a, Layers of epidermis; b, Rete Malpighii; c, Enlarged blood-vessel; d, Cells in the cutis;
 e, Lengthened papillæ.

lamellæ, varying in color from yellowish brown to dark brown; in one case which I observed, the rows of cells next the papillæ (the Malpighian layer) were filled with dark pigment-granules. In the portions of the epidermis between the enlarged papillæ the stellate cells are especially developed.*

* BÜCHNER (*Archiv für phys. Heilkunde*, 1854) reports concerning a case of ichthyosis; the microscopic examination of very fine horizontal sections presented a peculiar lamellated system, with numerous openings, mostly round, of from 0.02 to 0.08 of a millimetre in breadth. These were surrounded by countless lamellæ, concentrically arranged. Besides these, there were also many layers extending in every possible direction, quite similar to the laminae of bone between the Haversian

The hair-follicles are present when the disease is not very greatly developed, but they are somewhat lengthened; they

FIG. 26.



Ichthyosis.—*a*, Papilla; *b*, Pigmentary layer; *c*, Epidermis; *d*, Flattened epidermal cells.

usually contain a hair; the orifices of the hair-follicles are frequently closed. The sebaceous glands cease to be recognizable.*

canals. Most of these interstices were filled with a pale-gray granular matter. Many of them contained large globules, measuring as much as 0.03 of a millimetre, which possessed strong refractive powers. In only a very few of these interstices could a section of a hair be recognized—which, however, did not completely fill them, but were surrounded by a fatty layer. In many places there was considerable air between the lamellæ.

A delicate perpendicular section presented another picture: here were uniform cylindrical or pyramidal structures, 0.036 of a millimetre broad, resembling the papillæ of the cutis, which were composed of laminæ of epidermis. In the cylindrical forms the strata were arranged upon a longitudinal axis, in the pyramidal in an oblique manner. Many of these laminæ contained a great amount of fat; all possible grades of fatty metamorphosis were met with.

* SCHLOSSBERGER has furnished some interesting results of the chemical analysis of the scaly masses. In the residue of an alcoholic extract of the scales, which formed a reddish-yellow syrup, with acid reaction, and a smell similar to the ozmazome of the muscles, he found a great quantity of oil-globules and crystals of cholesterine. After washing this syrup with alcohol, the greater part of the fat and cholesterine remained, and the acid liquid, filtered off afterward, deposited, on further evaporation, crystals, which showed all the characters of hippuric acid. Besides this hippuric acid, of which he could make no elementary analysis, on fur-

Prognosis.—Slight cases of ichthyosis sebacea and simplex may last for years, and not occasion the patient any inconvenience save a little itching. Severe cases of ichthyosis hystrix and cornea are incurable, painful, and lead sooner or later to exhaustion, generally to tuberculosis.

Therapeutics.—Of internal remedies, arsenic alone may be mentioned for severe cases, which experience has taught us to use with success in affections of the horny structures. But local treatment is the most potent, and this consists in macerating the epidermis by the repeated use of warm baths; in mild cases frictions with oleaginous substances, cod-liver oil, or spermaceti and olive-oil, and in more severe cases the green soap is recommended as described under Psoriasis in the form of the soap-cure (*Schmierseifencyclus*), wrapping the patient in woollen coverings. Frictions with the following salve relieve the tension :

R. Pulv. alum. plumos.,
Cetacei, āā, 3 ij.
Ceraē alb.,
Olei oliv., āā, ℥j.
Ol. neroli, ℥x.

Sulphur-baths, with those of common salt, also are of temporary service. From what has been said, it may be seen that these remedies afford only a transient melioration to the patient, and can never suffice to cure. Acute exanthemata, as variola, scarlatina, and measles, frequently exercise a favorable influence on ichthyosis.

ther evaporation of this spirituous solution, crystals of cholesterine were deposited, of a shining, brownish color, as also the characteristic crystals of stearine. Ether dissolved a considerable quantity of solid and fluid fat, and also some cholesterine, from the scales after its treatment with alcohol. The epidermal masses still retained completely their original scaly form, after being exhausted with alcohol and ether, and had lost only to some degree their fatty feeling and appearance; they were not dissolved even after four weeks' digestion with lye or acetic acid. Water extracted some organic matter and salts; no trace of the sulphates could be found. After treatment in the Papinian digester, there was no distinct reaction of lime, when burned. The ashes amounted to somewhat over one per cent., were decidedly yellow, and effervesced but very faintly with acids; an aqueous solution had a neutral reaction, and contained chloride of sodium and potassium, as also traces of gypsum; a muriatic-acid solution held phosphate of iron, abundance of the phosphates of lime, and magnesia. Manganese, which should be in the hairs, could not be discovered.

[WILSON ("Lectures on Dermatology," 1871) places ichthyosis under the fourth of his primary heads, namely, *Trophopathic*, which forms his twelfth group, i. e., nutritive affections, the first division of which is *defect of nutrition*, which he names *dermatoxerasia* or *xeroderma*, and this is the ichthyosis of all other authors, he styling this variety *xeroderma ichthyoides*. Hence he regards the disease under consideration as the result of a deficient vitality, with a deficient circulation and innervation, and deficient formative and glandular function. "In such a case the skin will be thinner than natural; it will be pale; it will be more or less hard, and consequently wrinkled; it will be dry from the absence of its normal lubricating secretion; it will be rough, from abnormal desquamation; and there may be present, also, the evidence of a want of symmetry with the deeper parts, especially the osseous system." The *ichthyosis cornea* or *hystrix* he looks upon as an accumulation of the sebaceous secretion, colored dark by dirt, and ridicules their comparison to the quills of a porcupine. He says that "it is just possible that, in a protected situation, these spines, composed of epidermic exuviae and sebaceous substance, may reach the length of half an inch or more, but, in general, they barely exceed a quarter of an inch."

Fox makes ichthyosis an epithelial hypertrophy, using also the term *xeroderma* for the milder varieties. Many writers, who follow WILLAN, still retain this disease among the squamæ as in his classification; others, and these the more recent investigators, regard it as a true hypertrophy of the cuticle, with papillary enlargement.

NAYLER opens an interesting subject for further investigation which I do not find mentioned elsewhere, namely, the condition of the urine in ichthyosis. This was found, in the case which he studied, to be considerably more than twice that passed by three non-ichthyotic convalescents of nearly the same age and weight. The specific gravity was correspondingly low, the quantity of urea in the twenty-four hours was but little altered, which militates against the usually-received theory of the elimination, by the skin, of urea. A most careful analysis of the scales in this case by Dr. MARCET failed to discover any hippuric acid as SCHLOSSBERGER is said to have demonstrated in the note by our author.

Unfortunately, our knowledge of the characters and appearance of this disease, as also of its pathological anatomy, far exceeds our knowledge of its therapeutics. Ichthyosis is considered an incurable disease by all writers, as far as I can discover, except HUNT, who trusts to arsenic internally to cure this, as almost all other cutaneous affections. Externally he uses pure glycerine, mixed with Fowler's solution, diluted if necessary. HARDY ranks it among his "*difformities*," and says it is unwise to attempt a curative treatment which can never have a definite result, and may endanger the general health. Local ichthyosis is said to be cured by repeated applications of blistering-fluid. RAYER quotes PLUMBE's successful treatment of two cases of this affection on the legs, by strapping the affected parts tightly with adhesive plaster, which he then covered with a roller-

bandage kept constantly moistened with cold water. The straps were changed every fourth or fifth day. Cod-liver oil internally and externally is warmly recommended by many in general ichthyosis. Glycerine is very valuable to keep the skin soft. Ointments serve well sometimes, as the unguentum sambuci, with or without the alkaline carbonates (pot. subcarb. 3 ss ad ℥j). Vapor-baths should be tried.—L. D. B.]

5. VERRUCA.

Syn. *Warze*, NEUMANN; *Ephyma Verruca*, *Verrue*, *Sessile Wart*, *Common Wart*.—L. D. B.

There are various forms of these. *Verruca vulgaris*, the hard or common wart, is a small, dense, hemispherical or conical excrescence, occurring on the hands, feet, face, and ears, either solitary or in groups. It consists of enlarged papillæ, covered with a thick, hard layer of epidermis. Sometimes the epidermis sinks more deeply between the individual papillæ, whereby the surface acquires a cleft or lobulated appearance, and the wart seems to be formed of several separate parts put together (*acrothymion*). The vessels within are generally of considerable size.

Verruca filiformis (acrochordon) is a small, hard, thread-like excrescence, affecting especially the upper eyelids and neck, two to four lines long, and not much thicker than a bristle.

Verruca plana represents a flat structure, scarcely elevated above the level of the skin, sharply defined, a single one of which often comes on the hands of adults, and a greater number on the face and hands of children.

Other names are sometimes employed, each according to the form and consistence of the tumor, as *Porrum*, *Myrmecia*, *Ficus*, *Verruca sarcomatosa*, *lipomatosa*, etc.; these excrescences, however, belong to the group of tumors, and should be designated sarcoma, lipoma, etc. When warty formations are deeply pigmented, and are more extended, they are known as *nævi*, some forms of which agree essentially in structure with warts (*see* under *Nævus*).

Therapeutics.—If the warts are isolated, they are best removed with the curved scissors, two fingers of the left hand compressing the base, the pain and bleeding being thereby much diminished; the wounded surface is to be touched with nitrate of silver while the finger still compresses it. The cicatrix

remaining after this operation is very slight. If the warts are numerous, the operation must be repeated often ; or, they may be painted with nitric, chromic, or acetic acid ; the latter is employed alone or rubbed up into a paste with lac sulphuris. The concentrated carbohc acid without admixture is especially suited to verruca plana.

[A good application to the warts of children is a mixture of equal parts of dilute hydrochloric acid and muriated tincture of iron. WILSON and Fox think potassa fusa the best remedy, one application sufficing to destroy the wart. PLUMBE advises a small piece of cantharidal plaster to be bound for a day or two on the crown of the wart with adhesive plaster, when it will be found to be soft and moist, with a little ring of vesiculation around its base. It may then be picked off to the level of the skin, and caustic ends the affair. The acid nitrate of mercury (liquor hydrargyri nitratis) is a powerful caustic, but may be used with care.—L. D. B.]

6. CORNU CUTANEUM.

Syn. *Hauthorn*, NEUMANN ; *Cornu Humanum*, *Epidermic Horn*.—L. D. B.

Horns are roundish or conical, curved or spirally twisted epidermal protuberances of a brownish color, which sometimes attain a length of several inches, and are marked on their surface with elevated lines, and slightly-diagonal clefts. Sometimes the horn consists simply of a flat elevation of yellow, gray, brown, or blackish hue, which is formed by a circumscribed deposition of epidermis. It has the consistence of horn.

The microscopic examination of cutaneous horns shows their elementary structure to agree with that of the epidermis and nails. SIMON found a cortical and medullary substance similar to that in the horns of ruminants. A closer examination displays numerous canals penetrating the substance in which many semi-lunar crevices occur on drying. The mass is nowhere found to be calcified ; in a somewhat thicker section of the compact, central portion, with a low magnifying power, the small openings mentioned are seen to be divided cylindrical tubes, that is, the blood-vessels, partially stained red by their contents. Each vessel is surrounded by a clear

FIG. 27.



Cutaneous horn, from the Pathological Museum in Vienna.

amber-colored, circular area, and in this is found a granular substance forming the framework—which, however, in the denser portion of the horn, cannot be analyzed into its ultimate elements. The true vascular and papillary structure of the tumor can be best seen in vertical sections from the edge; the vessels run pretty much in the axis of the papilla; the exterior of the clear cylinder appears to be hard, and to correspond to the basement membrane. The central portion of the horn is compact, and not so vascular as the exterior (A. M. EDWARDS).

The cutaneous horn, as we understand it, is a greatly-developed wart, the appearance at least answering thereto; in both cases the whole horny structure being formed of small, closely-packed columns. In the two cases which came under our observation, the division into a cortical and medullary portion was not possible; quite as little could we discover the papillæ penetrating into the base of the horn; on the contrary, the base was very slightly concave. Such a horn, of course, was not developed from one papilla, but from a whole group. We have never seen true horns developing from sebaceous glands, as has been described by some authors.

Cornua are most common on the hairy scalp, forehead, and temples, more rarely on the face and extremities, least often on the body, especially in women: their growth is slow and without pain.

Treatment.—The cutaneous horn should be removed at its base, together with its matrix, and the wound repeatedly cauterized with nitrate of silver.

[WILSON collected ninety cases of horns, of which forty-four were in females, thirty-nine in males, and in seven the sex was not given. Of this number forty-eight were on the head, four on the face, four on the nose, eleven on the thigh, three on the leg and foot, six on the back, five on the glans penis, and nine on the trunk of the body. Of the eleven on the thigh, but two were on males; and of the forty-eight affecting the head, twenty-seven occurred in females, and nineteen in males. Of the forty-eight on the scalp, thirty-eight were on persons above the mid-period of life; several were over seventy, and one was ninety-seven; three were on young persons, and three on infants. DAMON (*"Structural Lesions of the Skin,"* 1869) gives histories, more or less complete, of more than eighty cases of human horns, occurring from 1599 to 1869, many of them of very

great interest. He considers "the human horn essentially an epidermic growth; having its seat in the lining membrane of a diseased sebaceous follicle." He refers to HENSCHL as agreeing with VIRCHOW in distinguishing three kinds of horns: 1. The rarest, having in their centre an elongated, dermal papilla, which are therefore colossal warts; 2. The commonest, especially on the hairy scalp, grows out of a sebaceous follicle; 3. From a circumscribed ichthyosis. TILBURY FOX says that they are usually sebaceous in origin; WILSON ("Lectures on Dermatology," 1871) recognizes a sebaceous and also an epidermal hypertrophic origin, with great development of the papillæ cutis.

There is no other treatment but excision, including the portion of skin on which they are formed; when this is completely accomplished, there is no need of cauterization.—L. D. B.]

7. POLYTRICHIA.

Syn. *Trichauzis*, *Hypertrophy of the Hairs*, NEUMANN; *Hypertrichosis*, *Trichoma*, *Trichosis Hirsuties*, *Haarigkeit*, *Augmented Hair-growth*, *Hirsuties*.—L. D. B.

In this, the hairs grow either on places which are otherwise bare (*hirsuties adnata*), or they occupy pigment-spots, or places which are otherwise provided with lunago—*hypertrichosis universalis*—for example, the beard in women and children. Moreover, the hairs may be unusually long, and thick, like bristles, and deeply pigmented; thus, those of the genitals and axillæ may reach a length of three or four feet; or, the eyebrows, and hairs on the breast and back, may attain unusual length.

These abnormal growths of hair are mostly congenital or inherited, more rarely they are developed after severe nervous exertions and critical diseases (*Beigel*, *Virchow's Archiv*, 44).

Some whole races are very hairy. Thus the Ainos in Yesso, north of Japan. The hair of the head in them forms an enormous mass, is very thick, and matted together, their beards are dense and long, and the greater portion of the face covered with dark hair; likewise the rest of the body (*Beigel*).

The extirpation of the hair is effected only by such means as *destroy the hair papillæ*, and we may try intense cauterization with galvano-caustic, etc. But, as such a destruction leaves scars, we prefer to extract the hairs with the epilating forceps.

[It is not advisable to attempt epilation, for it is both painful and ineffectual; a more luxuriant growth often succeeding the operation, induced by the irritation of the papillæ and hair-follicles. WILSON, consider-

ing the cause to be nervous and nutritive debility, frequently connected with female disorders, after regulating these, gives Fowler's solution, two or three minims, and uses active ablutions with juniper-tar soap and cold water. He discountenances all depilatories, and tells of a case where the attempt to cauterize each follicle with a red-hot needle was followed by an indelible mark from the carbon deposited, while the hair continued to grow.

MORIZ KOHN (HEBRA'S "*Skin Diseases*," II. Th., I. Lief., 1870) advises to remove at once, with the knife or otherwise, any moles on the face (or arms) which have long hairs; shaving he objects to, as leaving the shorn ends of the hairs, which are a great deformity, and he recommends the application of an Oriental paste as used at the present time by the Jews. I give the formula from a German pharmacopœia:

R. Orpiment, ʒ ss.
Calceis viv., ʒ ss.
Farinæ tritici, ʒ ij.
Aquæ ferv. q. s.

ut ft. pasta mollis. S. pasta depilatoria seu Rusma Turkorum (PLENCK).

A quicker action, he says, is produced by the sulphuret of lime. These pastes are spread on the part with a wooden spatula, to the thickness of a line, and left on for eight or ten minutes. They are then scraped off with a dull knife, the skin washed with warm water, and a zinc-ointment applied. Some powder, as rice or other, may be dusted on to fill the pores from which the hairs have come. This should be repeated every second or third day.

There are several depilatory powders in use at the present time; they are mostly quack preparations, whose components are kept secret. That of X. Bazin, of Philadelphia, and Gouraud's, of New York, are most common. They are both to be applied as a paste mixed with warm water, left on from four to eight or ten minutes, and scraped off with a blunt instrument; the part is to be washed with warm water immediately, care being taken not to rub in the paste, and a little cold cream or olive-oil is then laid on. Gouraud has the face washed first with soap and soft water, and, in obstinate cases, a vapor-bath may be first taken.

All these depilatory measures should be advised with great caution, and undertaken only under the direct oversight of the physician.—L. D. B.]

8. ONYCHOGRYPHOSIS.

Syn. *Hypertrophy of the Nails*, NEUMANN; *Degeneratio unguim*.—L. D. B.

The nails may increase in length and become curved inward, or they may be augmented in thickness. The long diameter of the nails is increased in those who seldom cut them, or as a consequence of sickness. They are enlarged in thickness either from the nail-substance becoming unusually

hard, so that many layers are superimposed on each other, or a soft deposit of nail-substance takes place on the under surface. All the nails may be affected, or only individual ones; they grow rough and uneven, lose their shining appearance, become separated from their matrix, or break into longitudinal or diagonal clefts. This increase in the substance of the nail may occur either from inflammation of the matrix, or from syphilis, psoriasis, or a fungous affection of the nail—*onychomycosis*. According to VIRCHOW (*Wurzb. Verhandlungen*, Band 6), in hypertrophy of the nail—*onychogryphosis*—we have either large lamellæ of nail heaped on each other, with interstices surrounded by horny layers (medullary spaces), or the whole nail acquires a conical or cubic form. The nail-bed becomes shortened and the nail itself contracted; finally, we have talon-shaped nails, in which the anterior portions crumble away; nails may even sometimes curve spirally.

B. HYPERTROPHY, WITH THE CONNECTIVE-TISSUE ELEMENTS PREDOMINATING.

I. CIRCUMSCRIBED.

1. CONDYLOMATA ACUMINATA.

Syn. *Condylomata Elevata*, *Spitze Condylome*, *Feigwarzen*, NEUMANN; *Venereal Warts*, *Vegetations*.—L. D. B.

These are wart-like structures, pointed or rounded, which occur either singly, or are often thickly crowded together; as a rule, they are dry, occasionally covered with a thin scale; sometimes they form tumors resembling a cock's-comb, of the size of an apple, or over. They appear principally on the genitals (prepuce, glans, labia majora and minora), around the anus, on the mucous membrane of the vagina and mouth, in the axilla, and on the toes. Some of them have broad pedicles, some narrow; they may be cleft many times at their summit (mulberry-like), and are often compressed and flattened by the pressure of two opposing surfaces of skin. On those parts where the condyloma is perfectly dry, as on the labia, the surface is white (*condylomata alba*). They are most readily developed on those parts which secrete an easily decomposing fluid; on the prepuce, and the labia minora, they are often ex-

cited by a profuse secretion of sebum, and also by the pus of a neighboring soft chancre. They may be communicated by contact, and successful inoculations have been made by LINDWURM, KAUTZ, and others, condylomata being reproduced on the place of inoculation.

Condylomata acuminata take their origin partly from an enlargement of previously-formed papillæ whose vessels are greatly dilated, partly from hyperplasia, partly from spindle-shaped migrating cells with many offshoots (?). The rete Malpighii is thickened, both by an increase of those cells which enter it from the papillæ (BIESIADECKI), and also by a division of the same. The horny layer is greatly thickened, and frequently cracked.*

Therapeutics.—The simplest proceeding is to excise these excrescences with scissors and knife, and afterward cauterize the base with nitrate of silver. Large condylomata with extensive pedicles may be removed with the galvano-caustic. The Vienna paste, or one of sulphuric acid and charcoal, is ap-

* 2. **FRAMBOËSIA.** Sometimes the granulations reach a considerable size, are accumulated in great number upon each other, become covered with cuticle on their outer surface, while from the interstices between them a purulent or seboid mass exudes; these are designated by the name *framboësia* (from their resemblance to strawberries and raspberries), *mycosis* (ALIBERT), *beerschwammähnliche multiple Papillargeschwülste* (KÖBNER). HEBRA uses the term *framboësia* for exuberant granulations (*proud flesh*) which appear on syphilitic, scrofulous, and lupous ulcers. These formations in most cases are related to syphilis and lupus in their microscopic structure, but are not necessarily identical with them. KÖBNER states that the hypertrophy proceeds from the connective tissue of the corium, and that the papillæ increase in length and breadth, that they contain also cells with many nuclei, and that there are dilated, and, as it seems, newly-formed blood-vessels. These growths occur mostly on the extremities (toes and hands), around the anus, on the nipples and sternum. Framboësia is also seen in the form of larger tumors with broad bases, especially on the hairy scalp and neck, whose surface may be studded with wart-like prominences from whose centre project bundles of hairs. This form is spontaneous, or follows a wound.

VIRCHOW (46. B., 1. Heft) found framboësia to consist of a very vascular granulation tissue, which is intimately attached to the connective tissue beneath, and which shows all the transitions from a simple increase of the nuclei of connective-tissue corpuscles, to a new formation abundant in cells. They approach therefore, in structure, the granulation tumors.*

[* This does not correspond to the descriptions, by other writers, of Framboësia, which is an eruptive disease of zymotic origin, occurring in Africa, the West Indies, and America. The synonyms of this latter are *Yaws* and *Pian*.—L. D. B.]

plicable to cases where the surrounding healthy skin can be readily shielded from the caustic. Also, we may use with success a mixture of sulphate of iron, alum, and powdered savine; or sesquichloride of iron, or carbolic acid.

II. DIFFUSE CONNECTIVE-TISSUE HYPERTROPHY.

1. PACHYDERMIA.

Syn. *Elephantiasis Arabum*, *Hypersarkosis*, *Morbus Herculeus*, *Roosbeen*, *Barbados-bein*, NEUMANN; *Bucnemia Tropica*, *Spargosis*, *Sarcoma Mucosum*, *Elephantiasis Tubereux*, *Barbadoes Leg*, *Cochin Leg*, *Elephant Leg*, *Glandular Disease of Barbadoes*.—L. D. B.

By this name is designated a disease which consists in an increase in substance of the skin and subcutaneous cellular tissue, whereby the circumference of the affected portion of the body is very considerably increased. It attacks the legs, feet, scrotum, and penis, labia and clitoris; sometimes the upper extremities also are involved, also the female breasts and the ears.

The *scrotum* in extreme cases becomes a sac which may extend to the feet, and has been known to weigh over one hundred pounds! The testicles generally remain unaltered. The penis contracts and is completely lost within the thickened and lengthened prepuce. According to RAYER, elephantiasis of the genitals is at first an hypertrophy of the subcutaneous cellular tissue, with a subsequent thickening of the fibrous structure of the skin. The disease begins like erysipelas, with œdematous swelling of the lymphatic glands, and the adjacent structures. When the skin is cut, a clear yellowish fluid oozes out, which quickly coagulates, and leaves masses of fibrine (lymph). The lymphatics lose their power of conduction, and the lymph collects in the hypertrophic places; the disease is therefore not an ordinary œdema, but a lymphatic engorgement. The connective-tissue cells are enlarged, and newly-formed cells accumulate in great quantity. When the erysipelas recurs, a condensation and thickening of the tissue finally remain, and the epidermis, the cutis, the subcutaneous cellular tissue, the fasciæ, the intermuscular septa, and even the periosteum, may be involved. When the papillary layer is chiefly

at fault, the disease is called *elephantiasis papillaris seu verrucosa*; if the deeper layers are affected, the surface of the skin may remain normal and smooth, forming *elephantiasis lavis seu glabra*; or, several points are elevated in the form of pea-like excrescences (*eleph. tuberosa seu nodosa*). If there are pigmentary deposits in the rete Malpighii, or epidermis, whereby the affected part is colored dark, we have *eleph. fusca et nigra*. Should the newly-formed connective-tissue masses be firm, we call it *eleph. dura*, when they are thinner and softer, *eleph. mollis*. Finally, when the tubercles or the infiltration suppurates, there is formed *eleph. ulcerosa*. Sometimes we have hypertrophy or new formation of blood-vessels, of considerable extent (*elephantiasis teleangiectodes*). There is no essential change in the glandular organs of the skin, except that they are located deeper; the hair-follicles, for example, lie half an inch deep. The skin cannot be dissected from the layers of adjacent cellular tissue, and passes over directly without any definite boundary into a whitish hard mass, often more than two inches in thickness, in which are found many enlarged blood-vessels. Around the testicle the œdematous cellular tissue gives the sensation of fluctuation to the finger.

The *lower extremities* frequently become monstrous, the skin forming a callous mass with the subcutaneous tissue, which is abundantly infiltrated with serum, while the fat has completely disappeared from the adipose tissue; this process extends down between the muscles even to the periosteum, and causes both the muscles and also the bones, which ankylose during the course of the disease, to atrophy. On the lower leg especially the disease may begin either as an independent erysipelatous inflammation, or be caused by an eczema, phlebitis, or lymphangitis. When the disease has lasted long, we can recognize with the naked eye, on the surface, a mass of hypertrophied papillæ, which cover the leg like the hairs of a brush; frequently also large ulcers are formed, with swollen, thick edges, and a hard base, granulating poorly, and secreting but little pus. Generally the epidermis also is hypertrophied, forming prolongations or plates, as in ichthyosis.

Elephantiasis is a pandemic disease, but comes endemically in certain regions, especially in the island of Barbadoes, on the

Antilles, in Brazil, in British and Dutch India; in Japan, every tenth man is said to suffer from it; it is somewhat rarer in Mauritius and Algeria. In Egypt it has been prevalent since the period of greatest antiquity, especially in Lower Egypt; likewise in the region of Sierra Leone, on the pepper coast of Morocco, and Morea. Dry or boggy places, destitute of trees, are more frequently visited by it than those with luxuriant vegetation. In Europe it is found everywhere, especially on the coasts of the Baltic and Mediterranean Seas, and most frequently in Ireland and France. It is seen oftener in men than women; seldom begins before puberty; this is especially true of elephantiasis of the scrotum. The hereditability of it seems probable; as to other causes we know but little. In regions where it is endemic it is observed that the attacks of inflammation are repeated at the rainy seasons, and coincident with epidemics of intermittent fever; continued cold, and sudden changes in the wind, evaporation from stagnant water, and poor nourishment, are said to have some connection with it. As to the sporadic cases which happen among us, they are frequently a condition following chronic eczema, erysipelas, phlebitis, and lymphangitis, combined with varicose veins or ulcers, or also with affections of the bones, chronic periostitis, caries, and necrosis.

Prognosis.—Elephantiasis is a disease of the skin, with which persons may be affected for years without its having any essential influence on their functions; the diseased portions increase in size with time, and their weight finally becomes burdensome; ulcers which refuse to heal occur on the legs and make progression impossible; sometimes an erysipelatous inflammation sets in with fatal termination; often the masses of exudation suppurate, forming large abscesses, with a subsequent diminution in the size of the limb. Gangrene, also, is not a rare result. Moreover, atrophy of the muscles, thickening of the neurilemma of the nerves, and consequent painful hyperæsthesiæ; in consequence, likewise, thickening of the bone may occur. Coitus is yet possible in elephantiasis of the genitals, when it is not advanced, but a considerable hypertrophy of the prepuce and scrotum precludes this.

Treatment.—If the disease is seen in the beginning, and if

it is local, we can prevent further growth and diminish the present size. This is done by maintaining the horizontal position and enveloping the limb in linen or rubber bandages, two fingers broad, which are moistened and applied as tightly as possible, the depressions in the limb being first filled up with lint. In the first few days a great diminution in size takes place, from the disappearance of the serous infiltration of the skin, and subcutaneous cellular tissue, but after a while this decrease in magnitude proceeds but slowly, because solid tissue alone remains, and after a while the dimensions of the part remain unchanged. The plaster-of-Paris bandage has no advantage over those named, and becomes loose quite as quickly as the ordinary form. The local application of caustic potash and iodine in glycerine contributes also to the reduction of the volume of the limb. In cases where the elephantiasis is attended with incurable ulcers, amputation of the affected extremity is indicated as early as possible, for it cannot perform its function, and gives annoyance to the patient by its weight. If the scrotum is affected to a great degree, we must resort to a radical operation for relief. Ligature or digital compression of the blood-vessels has been successfully carried out of late.

LAMBROSO describes a remarkable case of general hypertrophy (*Makrosomie*) (*Giornal. delle mal. della pelle*, 1866, reported in the *Archiv für Dermatol.*, 1. Heft, 128). The patient, aged twenty-one, noticed that the size of his body had so increased within four months that he was obliged to alter his clothing four times in this period; his appetite became ravenous, and at the same time he suffered from pains in his bones and joints, and general weakness. LAMBROSO saw him after the disease had lasted for sixteen years, and found his body-weight to be 120.4 kilogrammes (about 320 pounds); the skin was dark yellow, the beard scanty, the hair of the head bristly, the face resembling a lion, of great breadth, especially between the ossa zygomatica; the chin was very long, the under lip greatly thickened, also the neck, shoulders, and thorax; the forearms, hands, and feet as well. The skin was, moreover, of a reddish-yellow color, and strikingly thickened on the hypertrophied parts of the forearms, feet, and face.*

["Iodine, frictions, and compression, are the measures which have been chiefly useful," is the sum and substance of the treatment for chronic cases, as laid down in most books. Of course, symptoms must be met. The anæmic and cachectic require iron and tonics; those with a syphilitic taint

[* This would correspond better with elephantiasis Græcorum, or true leprosy. —L. D. B.]

may be benefited by undergoing a mercurial and iodide-of-potassium course; concomitant malarial symptoms demand quinine; when an erythematous or erysipelatous state of the integument exists, diaphoretics, diuretics, and cooling, anodyne, emollient, or astringent washes are of value; a saturated solution of sulphate of iron is recommended.

I saw a chronic case treated at the Hôpital St. Louis by LALLIER, with the repeated application of collodion, with the expectation that its contractile powers would diminish the size of both lower limbs which were affected. The patient was refractory, and would not maintain the horizontal position, and caused the collodial cuticle to crack by his frequent movements. I cannot tell the result of the case. In mild cases a stout elastic stocking, extending high up, might be of service.—L. D. B.]

2. HYPERTROPHY AND ULCERATION OF THE SKIN, WITH AMYLOID DEGENERATION.

LINDWURM and BUHL published the first case of this kind, and O. WEBER reported an amyloid degeneration of the capillaries of the face alone; BÄRENSPRUNG, the same on the base of an indurated chancre, and I have found it in the derma of old age.

The case given by LINDWURM and BUHL occurred in a man fifty-four years old, on whose skin red spots came and went, generally after bathing, and after a while remained stationary. They itched, desquamated, and had at one time a resemblance to psoriasis, at another to pityriasis. These patches increased in number and size, at first formed thin and afterward thicker crusts; some serous fluid exuded and concreted after their removal.

The whole skin was affected from head to foot. On the head there were numerous circumscribed patches of greater or less size, standing closely together, and covered with thin silvery scales (*pityriasis rubra*). When these were scratched off, the skin was found dry, reddened, not bleeding. These scales were most marked on the hairy portions of the body, on both ears, on the forehead and nose, and the somewhat thickened eyelids. The eyelashes were in good condition, the conjunctivæ somewhat injected. A similar affection, but in a higher degree, was found on the neck, buttocks, and extremities. The whole surface was covered with a somewhat prominent red eruption of various-sized round blotches, resembling wheals,

which left the skin between normal, white or brownish colored. These quaddels were covered with white scales which were easily removed, and left a smooth, red surface, neither exuding nor bleeding. The largest of these infiltrations of the skin, especially on the breast and neck, reached a diameter of an inch. On other parts of the breast there were larger spots covered with closely-set red papules, representing an uneven thickening of the skin, and covered with fine, white scales (*lichen ruber*).

On some portions of the anterior surface of the thorax, but principally on the forearm and leg, there were wart-like excrescences crowded together, several lines high, which to the naked eye appeared to be papillary prominences covered with thick epidermal masses. These wart-like growths corresponded wholly in structure to ichthyosis hystrix or cornea; on other places the uneven, rough, thickened skin had more of a resemblance to ichthyosis simplex. The palmar surface of the hand was for the most part thickened, parchment-like, and covered with great scaly collections and plates of epidermis with deep and very painful fissures. The dorsum was incrustated with the above-described red, scaly eminences. The movements, and especially the extension of the fingers, were thus rendered difficult and very painful. There were, moreover, numerous small and large ulcers scattered over the whole surface of the body, which, the patient stated, were occasioned by scratching. He complained of the great sensitiveness of the skin, also of a "cutaneous pain," independent of the other disease. The skin had a variegated appearance.

BUHL examined the diseased skin microscopically, and gives the following:

The epidermis lay in thick, irregular strata, the thickest masses being split into coarse, horny scales, without the individual cells having undergone any especial alteration. The rete Malpighii was but little thickened, and in places brown colored; no further change could be perceived in it. The form and size of the papillæ were more striking. They were seldom seen singly, but almost always connected together; they had generally a pear or club shaped form; that is, their circumference was greater in the middle of their length than at

their base. But their whole volume had increased from three to six times the normal, as microscopic measurement showed, and this was especially marked in their height, which amounted to from $\frac{1}{5}$ " to $\frac{3}{5}$ ". The knob-like extremities often displayed slight or deeper depressions, indicating their composition of several papillæ. The most important discovery, however, was within the substance of the papillæ. This was filled with shining bodies clearly visible, having a diameter of from 0.008–0.01 mm. and over, closely placed in rows, or apparently without arrangement. Their whole appearance, especially their behavior with iodine and sulphuric acid, left no doubt that they should be reckoned among the *so-called amyloid bodies*. They began almost always at the base of the papillæ, and reached their greatest number and volume at the nodular extremity. Delicate sections showed not only the familiar iodine and sulphuric acid reaction well marked, but the power of staining rapidly with carmine was also much lessened.

The hairs and sudoriferous glands were unchanged, except that the spiral ducts of the latter were straightened out in the thick epidermal layers.

This, therefore, is not solely a simple thickening of the papillary layer and the superjacent epidermis, but the essential condition consists in an immoderate development of the capillary plexus, and that not alone in the way of a simple dilatation of the same and lateral outgrowth, but in an overgrowth with unusual increase, and consequent amyloid degeneration, of the cells composing their coats. This degeneration, which is located in the vascular walls, and not alone in the nuclei, must be looked upon as the cause, on the one hand, of the rigidity in the walls of the capillaries, and the necessarily hardened condition of the affected parts, and also of the impassibility of the capillaries to the blood-stream and the consequent destruction and loss of whole rows of papillæ, and the reparation by ulceration. The cells in the deeper layers of the cutis, which had escaped the amyloid degeneration, were, therefore, the cause of the healing of the ulcerated spots, and produced the smooth, white cicatrices.

3. SCLERODERMA.

Syn. *Sclerema*, *Sclerodermia*, *Teleosclerosis-rheumatica*, *Sclerostenosis*, NEUMANN; *Scleroma Adultorum*, *Cutis Tensa Chronica*, *Keloid Addisonii*, *Elephantiasis Sclerosa*, *Sclerosis Dermatos*, *Scleriasis*, *Hautsclerem*.—L. D. B.

This rare form of hypertrophy, of which there are over forty cases on record (GAMBERINUS, VILLEMEN, KÖBNER, WERNICKE, BAZIN, ARNING, AUSPITZ, BINZ, GINTRAC, NORDT, FÖRSTER, THIRIAL, GILETTE, PUTEGNAT, CURZIO, RAYER, FORGET, LEISRINK, RASMUSSEN, PAULICKI, and others), attacks either single portions of the skin, or the whole surface, both of adults and of children. When affecting adults, the term *scleroderma* is used, and for the latter, *sclerema neonatorum*.

a. SCLERODERMA.

The development of this disease is usually slow; the patients first noticing that certain portions of the body, mostly the neck and face, become stiff, and move with difficulty. Thus, the motions of the head are embarrassed when the neck is affected; in scleroderma of the face, its physiological expression is lost, the lines and wrinkles become obliterated, the play of features prevented, so that there is almost the appearance of constrained laugh present (GILETTE); the eyelids are to some extent drawn down, the alæ of the nose distended, the nose thickened and infiltrated (*Rhinoscleroma*, HEBRA); the abdominal walls may become rigid, likewise the scrotum and penis, so that erection is impossible: the elbows are flexed, fingers half extended and claw-like; the vertebral column bent forward. Moreover, the respiration is hindered in sclerosis of the thorax. The skin feels hard, board-like, or resembles leather, and cannot be pinched into folds. The inflexibility is most evident on the skin of the head, forehead, eyelids, and cheeks. The sensation, perspiration, and sensibility to temperature, are everywhere present; the sebaceous secretion continues, and acne-pustules (KÖBNER) and comedones even occur.

Etiology.—As to the cause of this disease, most observers are of but one opinion, namely, that a preceding rheumatism disposes especially to it. From a comparison in regard to age and sex, we find that twenty patients had reached the age of thirty-five, and but six were over forty; also, that the disease

is most frequent in women. Menstrual disturbances, diseases of the heart, and poor nourishment, are likewise alleged to be disposing causes.

I have thus far had an opportunity of twice observing the disease in question: the first case occurred in HEBRA's clinic; the second in that of Dr. F. Fieber. The former one has already been published by permission, by H. AUSPITZ (*Wiener med. Wochenschrift*).

CASE I.—F. K., aged twenty-nine years, has had several diseases following each other, since he was fourteen years of age (typhus fever, pneumonia, and intermittent fever), which, however, had no connection with the disease in question; one year before he came under our observation, he was reduced to poverty and misery by loss of occupation, and was tormented with vermin. At this time, he first noticed in the groin, and afterward in the elbow joints, an increasing unpleasant tension of the skin, as if it were too small, and, at the same time, the parts mentioned became of a darker hue. On his admission to the Vienna General Hospital, November 4, 1862, the brown discoloration affected the skin in various degrees, especially on the abdomen, axillæ, and loins; the skin was very tense and shining, but not hard. The man was of middle size, powerfully built, and of pretty good muscular development; lips pale, the opening of the mouth was contracted, and the forehead could not be wrinkled. The hair of beard and head was normal, the secretion of sweat frequent and profuse; the movements of the head, especially sideways, were restricted, the skin of forehead was very stiff, and apparently thickened, less so on the neck; the skin of the abdomen could be raised in small folds. Pain and tension in the axillæ, and the skin covering the pectoral muscle, followed any attempt to lift the upper extremities above the horizontal line; only with pain could the forearms be flexed to a right angle with the arm; the joints of the lower extremities were unaffected. Examination of the other organs showed the spleen considerably enlarged, and the heart-sounds obscured; the temperature and secretion of the skin were normal. With the æsthesiometer, AUSPITZ found a departure from the normal sensibility only in the upper arms, on the neck, and breast.

The condition of the patient remained the same for four months; at the end of March he had an attack of fever, attended with oedema of the face, and the abundant though transient presence of albumen and epithelium in the urine; in April he suffered from three attacks of intermittent fever, and the urine subsequently always contained albumen. From the middle of May, symptoms of Bright's disease of the kidneys became prominent, with a striking diminution of the power of vision; there were considerable febrile movement and pain in the joints. On the 28th of May, cramps in the extremities occurred, with privation of consciousness; the eyesight was completely lost, and after the first of June he commenced to vomit a

green fluid, diarrhœa soon followed, and the patient died on the 20th, after a spasm.

CASE II.—Cecilia, twelve years old, says that she has always enjoyed uninterrupted good health since her earliest childhood. In October, 1868, there came a flat, painless thickening over the left shoulder-blade, corresponding to the supra- and infra-spinous fossæ, and at the same time vari-ously-colored spots, of a more or less brown color appeared upon the same, and on the left half of the breast, corresponding to the pectoral muscle, also over the left upper extremity with the exception of the axillæ, extending from the acromion to the tip of the finger. The skin on the places spoken of is said to have slowly become hard, and the whole extremity lean and rigid.

All these phenomena were ascribed, by both patient and her friends, to the results of blows which her teacher had repeatedly inflicted on her back and breast on various occasions.

When first observed, on the 3d of May, 1869, besides the discolorations and thickenings of the skin above-mentioned, the following appearances were noted: The skin of the whole left upper extremity was hard, board-like, and tense, of a dark-brown color; it could not be raised in folds, and appeared as if she was enveloped in a leather sheath; moreover, the skin was partly covered with scales, and in some places had the appearance of cicatricial tissue. The muscles of the extremity were atrophied. The forearm, fixed at a right angle to the arm, could be extended but very little; the movements of the fingers were greatly restricted, the hand unnaturally extended, and the fingers flexed.

The electro-muscular contractility was tolerably normal. The use of steam-baths, and the application of diachylon-salve for several months, gave no relief. After galvanization, the outer surface of the upper arm felt somewhat softened, the inner surface of the forearm less so; the movements of the joints in general were improved, the discolorations partly disappeared.

Anatomy.—The *post-mortem* examination in the first case, which had already progressed very far, revealed Bright's kidneys, hypertrophy of the left ventricle, bronchial obstruction in the right middle lobe of the lungs, and the following state in the skin: The general surface, more especially that of the abdomen, was of a dirty-brown color, the thickness of the Malpighian layer not increased; the cylindrical cells around the papillæ possessed nuclei surrounded with dark-brown pigment-granules (Fig. 29); the contents of these cells were of a homogeneous, brownish hue, the pigment being less abundant in the more superficial layers. The papillæ of the corium were moderately filled with connective-tissue cells, the papillary blood-vessels

not enlarged. The larger capillaries of the cutis had flakes of brown pigment partly in their own walls, partly in the adjacent tissue. Coloring-matter is further found in the cellular coating of the sudoriferous ducts, in outer root-sheaths of the hairs, and in the epithelium of the sebaceous glands. The tissue of the derma, especially on the breast, less so on the arm, presents quite a striking increase of the connective-tissue bands, both to the naked eye and to the microscope; it also has elastic fibres in great quantity; this augmentation of the fibrous tissue extends also to the subcutaneous areolar stratum, which contains but little fat. Sebaceous and perspiratory glands presented no abnormalities.

A piece of skin taken from the *second case* was hardened in chromic acid, and, on microscopic section, the following changes were observed in it:

The cells of the rete Malpighii were filled with an abundant granular pigment (Fig. 28), but the papillary layer was unchanged; within the same were closely-compressed bundles of connective tissue, crossing each other in various directions, which had lost their power of distention in dilute acetic acid. This sclerotic condition of the leather skin extends to, and even to some extent into, the adipose tissue, which is thus transformed partly into a similar organization, partly into a dense fibrous tissue, abundant in cells. The thickness of the corium is thereby greatly increased. In the sclerotic skin we also find masses of connective-tissue cells which in part take the form

FIG. 28.

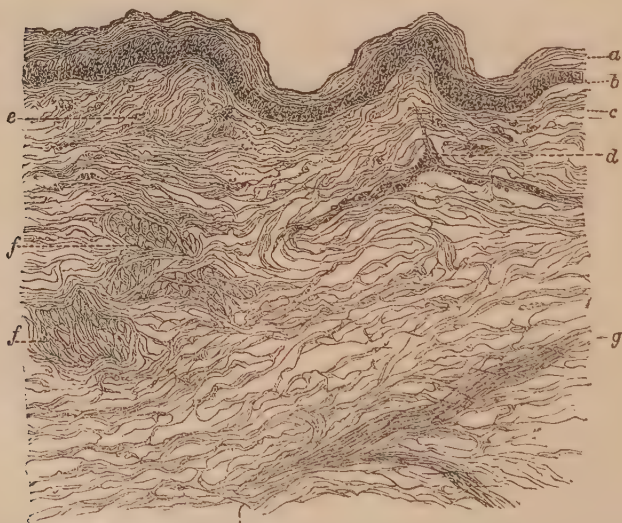


Section of skin from scleroderma (Case 2).
—*a*, Pigmented rete Malpighii; *b*, Cell-proliferations in the cutis; *c*, Duct of a sweat-gland; *d*, Cellular infiltrations in large bands; *e*, The same in the panniculus adiposus.

of bands, and in part insinuate themselves between the groups of fat-cells. Few hairs are seen, but the sebaceous glands are present; large bundles of nerves are also seen. The twisted ducts of the sweat-glands are drawn out so that sections of single portions of them are removed, and the intervening space filled with fibrillated connective tissue.

The microscopic examination of ARNING's cases revealed great hypertrophy and proportionate increase of the elastic tissue; the papillæ and vessels of the skin were perfectly normal, but immediately beneath the papillary layer a thick net-work of elastic fibres was met with, which increased with the depth. The glands and hairs were unchanged, these same hyperplasiæ of elastic fibres were also found in the mucous membrane. In FÖRSTER's case it was principally the subcutaneous areolar tissue which was increased, while the elastic tissue played but a second part. RASMUSSEN (*Edinburgh Medical Journal*, 1867) found the corium to consist of compact connective tissue, containing many elastic fibres, the vessels dilated, with round and spindle-shaped cells adhering to their walls.

FIG. 29.



Scleroderma.—*a*, Epidermis; *b*, Rete Malpighii, greatly pigmented; *c*, Cutis, very vascular; *d*, Pigment stripe from an obliterated vessel; *e*, Masses of pigment; *f*, Sections of muscular fibres; *g*, Longitudinal bands of the same.

Prognosis.—The greater number of the cases observed have run a very protracted course, and the recovery began after the disease had existed a long time; in other cases there was a fatal

termination from exhaustion, or complications with heart-affections, tuberculosis, erysipelas, and, as in our case, Bright's disease.

Therapeutics.—Quinine, together with vapor-baths, is held in best repute of all remedies; likewise cod-liver oil and iron, an ointment of the oxide of copper, of preparations of mercury, iodine, electricity, aromatic baths, and a mixture consisting of tar, glycerine, and starch, have been used.

b. SCLEREMA NEONATORUM.

This is an induration of the cellular tissue of new-born children.

The disease comes mostly during the first months of life, but sometimes not until the second or third year, and begins thus: The skin, which is at first yellowish or reddish, gradually fades in color, and at the same time becomes harder and more inflexible, the abdomen and face usually being first attacked. These phenomena, when occurring in well-nourished children, are wont to disappear slowly, and the temperature and respiration, which had sunken below the normal, regain the natural standard, or there may be various disturbances of circulation associated therewith, which may lead to hypostatic pneumonia, and thus to a fatal termination.

The causes of this disease are congenital debility, vascular disturbances,* disease of the navel, and wounds, as, for instance, that produced in ritual circumcision.

The *panniculus adiposus* of such children resembles stearine; there is also lymphatic infiltration of the same, and but little connective-tissue hypertrophy in the lower layers of the corium (FÖRSTER). LÖSCHNER found the corium much thicker than normal, containing many roundish and longish collections of embryonic connective-tissue cells and nuclei, the former surrounding also the fatty tissue.

CHEVRENT found in the blood of children, dying of a jaundiced sclerema, two coloring-principles which did not correspond to the coloring-matter of

* According to LÖSCHNER (*Prager Vierteljahrschrift*, 1860), sclerema frequently comes from an inappropriate nourishment and nursing; perhaps also from chronic diseases of the lungs, liver, and alimentary canal; sclerema also follows a venous capillary stasis, or occurs from vascular anomalies. HENLE and RIEGLER think that it proceeds from an insufficient lymphatic system. PASTORELLA is of the opinion that it has its origin in lymphangitis.

the bile, and which seemed to be a modification of that which HENNING has proved to resemble indigo.

Therapeutics.—External warmth must be kept up artificially by means of bottles of water, cloths, and frictions. Good nourishment is important, and quinine may be administered.

[WILSON regards this disease (which he calls *dermatosclerosis*) as allied closely to pachydermia or elephantiasis Arabum, and he describes also a local form occurring on the lower extremities, associated most commonly with varicose disease of those members. I have also sometimes met with a condition to which this name may be well applied, after eczema of the legs, attending varicose ulcers, whereby the skin was rendered hard, dense, shining, and closely adherent to the subjacent structures. This appeared to be from a fibrinous exudation into and beneath the skin, which had a strong tendency to contract; for the parts above and below this formation, which was usually located just above the ankle, were swollen and frequently œdematous, while the sclerotic portion was firmly contracted, even to the close embracing of the bone and tendons.

DAMON considers this affection (he uses the term *sclerodermia*) as “an advanced stage of elephantiasis Arabum, or only a modification of that disease.” Its earliest stage, he says, is characterized by a peculiar infiltration of the skin, identical in its nature and mode of production with that of pachydermia; he does not regard these affections as simple hypertrophies, but ranks them among “pathological new formations,” with lupus, morphaea, epithelioma, etc.

MORIZ KOHN (VIRCHOW'S *Handbuch, Hautkrankheiten*, 1870), after reviewing all the published cases and their treatment, states that all imaginable local means, as emollient and solvent ointments, plasters, and baths, have been tried without effect. He looks upon the disease as the expression of a constitutional affection, and regards a general tonic treatment as the one advisable. But he says that only the first stage, consisting of infiltration, can ever be in any degree restored, and this may happen spontaneously after months or years, while no portion of the skin, which has once undergone the sclerotic process of contraction and hardening, can ever return to a normal condition.—L. D. B.]

CLASS V.

ATROPHIES.

By atrophy we understand a removal of the elements forming a tissue, without a proportionate replacement of the same (ROKITANSKY), and this occurs either from a lack of formation of a sufficient number of elements, or from the loss of more than are formed anew. We recognize: 1. A *true atrophy*, in which the elements have diminished in size, or shrunken, and; 2. A *numerical atrophy*, in which the number of elements composing a tissue is lessened. Besides these, we have also a *qualitative atrophy*, where the elements degenerate; and a *necrobiotic atrophy* (VIRCHOW), in which they are completely destroyed. Atrophies result from a diminution in the quantity of blood, from impermeability of the capillaries, from a failure in the power of an organ, from nutritive anomalies, from strain, pressure, absorption, etc. (ROKITANSKY). To this class belong also the fatty, horny, schirrous, calcareous, caseous, and amyloid degenerations, the senile changes, etc.

1. ATROPHIA CUTIS.

Besides the atrophy consequent upon ulcerations ending in the formation of cicatricial tissue which takes the place of the portion of corium lost, we have atrophy of the cutis from the pressure of tumors, and from callous thickening of the epidermis, as in clavus, etc.; the vessels are obliterated by the pressure, and the nutrition of the corium suspended; the more tightly the skin is stretched, the more quickly does the atrophy progress, the skin becoming thin, shining, and transparent, the

lines and wrinkles disappearing, the papillary layer also atrophies, and the epidermis finally ruptures, leaving the rete Malpighii exposed. We may also have atrophy of the skin in consequence of chronic cutaneous disorders; as lupus, prurigo, favus, etc. To this class belong likewise the cicatrices of pregnancy, and the wrinkles, principally on the face and thighs, appearing after exhaustive diseases, as typhus, more especially in those who were before well nourished. B. S. SCHULTZE (JENA's *Zeitschrift*, 1868) met with these cicatrices more frequently in women, even those who had never had children, than in men; those on the thigh, peculiarly so in women, assume rather a longitudinal direction, which is connected with their lateral development, while in men they are more diagonal.

2. SENILE ALTERATIONS IN THE SKIN.

We will here enter very fully upon the atrophy of the skin, as it occurs in consequence of physiological senescence.

Beginning with the cutis, we find, first of all, on thin section, that it has *diminished in thickness*, this change affecting chiefly the papillæ in a very striking manner. In those places where they are naturally small (forehead and abdomen) we find the Malpighian layer in the skin of old age running in a straight line over the surface of the smooth corium, and in those places where the papillæ in middle life are most developed, as at the ends of the fingers, they are in the senile skin considerably diminished in length, and subsequently in their other proportions as well; and, indeed, some of them to such an extent that the whole body seems to be completely filled with their sensation-corpuscles, or their convoluted vascular loops. These changes, therefore, can be described as a shrinking, which must necessarily have its influence upon the arrangement of the appendages of the skin.

The tissue of a cutis in this state presents many appearances indicating a retrograde metamorphosis. These consist in infiltrations, caused either by

1. *Very minute molecules, of uniform size, scattered throughout the tissue; or—*
2. *Larger, clearly-recognizable granules.*

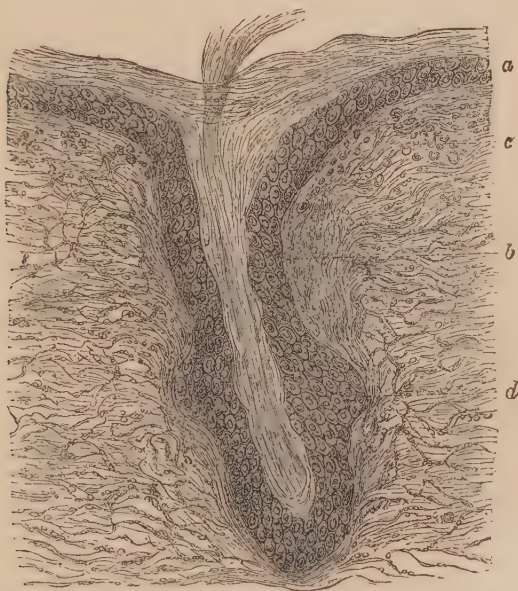
In the former case, the fibrillation of the tissue can no lon-

ger be recognized, but in the latter the fibres may be easily traced, and their connections made out; they yet form meshes within which lie the coarser granules, sometimes in small rows.

Both of these changes must be clearly differentiated from a third, which is known as *colloid degeneration* (ROKITANSKY); vitreous, amyloid, or hyaline deterioration (O. WEBER). A fourth form of senile texture alteration may be known as *fatty degeneration*, and a fifth as *pigmentary deposition*. The first two are common, the three latter are rare. It must also be remarked that the fine and coarse infiltrations are frequently combined, so that the molecular variety is seen in the deeper part of the cutis, and the coarser granules above.

1. *The fine molecular deposition* is, as has been remarked, produced by the presence of minute particles in great quantity, almost entirely superseding the fibrillous connective tissue; these are not affected by ether or alcohol, nor can they be stained with carmine. The cutis has a milky or albuminoid opacity.

FIG. 30.

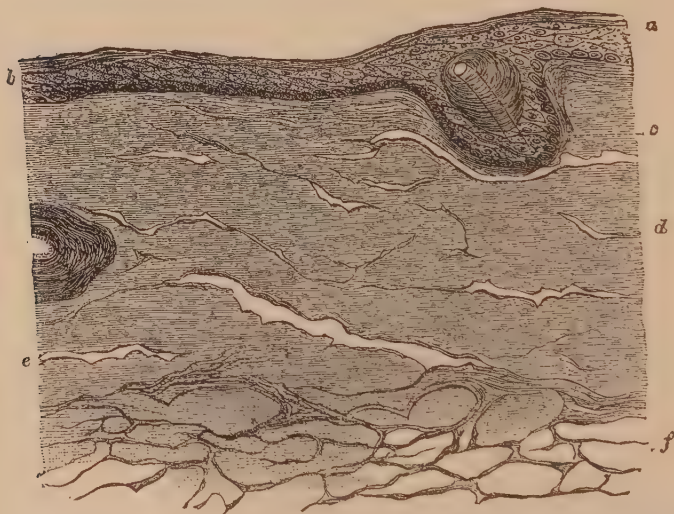


Section from the forehead of an old person, with the coarser granular infiltration and pigmented cutis.
—*a*, Granular pigment in the rete Malpighii, in the outer root-sheath and cutis; *b*, Granular infiltration; *c*, Delicate fibrous connective tissue; *d*, Expanded hair-follicle, with increased accumulation of cells of outer sheath.

2. *The coarsely-granular infiltration* (Fig. 30) affects the upper layers of the derma more frequently than the deeper. Sections of cutis thus infiltrated are of a pale-green or yellowish color. When treated with carminate of ammonia, and acetic acid, minute bodies become clearly visible; which are, however, but little stained, and not at all swollen; on the contrary, they are shrunken, notwithstanding the addition of these reagents. Only with high magnifying powers can we recognize that the globules are often arranged in rows. The masses of fibres, moreover, are not swollen. The conjecture arises, whether all the molecules do not proceed from a contraction of the fibrillæ.

I do not doubt but that these two changes differ from one another only in grade, and I should be inclined to regard the finely-molecular infiltration as the more advanced stage; and

FIG. 31.



Vitreous degeneration of the skin of the forehead.—*a*, Epidermis; *b*, Darkly-pigmented rete Malpighii; *c*, Pigmented outer root-sheath; *d*, Cutis having undergone hyaline degeneration; *e*, Fissures, which have arisen from the preparation of the section; *f*, Delicate fibrous net-work of the panniculus adiposus; *g*, Follicle with horny epidermal cells deep in the cutis.

this the more, as infiltrations of this form are found sometimes in the form of single patches, and sometimes in strata, in one and the same cutis.

3. *The vitreous degeneration* (Fig. 31). In this the fibres of

the cutis have become wholly unrecognizable, and their place supplied by a homogeneous mass having a resemblance to solidified glue. The nerves and blood-vessels appear to have perished entirely; quite as little is to be seen of the other appendages of the skin. The whole cutis is greatly thinned, and, in the microscopic section the tissue is traversed vertically and transversely by many fissures, which probably happen during the preparation of the specimen, and show the great brittleness of the tissue. Similar changes have been described by LINDWURM and BUHL in a case of hypertrophy and ulceration of the skin with amyloid degeneration; by O. WEBER in the vessels of the skin of the face; by BÄRENSPRUNG on the base of an indurated chancre; and, as I shall hereafter describe, in elephantiasis Græcorum. The degeneration originates from the vessels, has a slow progress, and shows, therefore, a deep disturbance of nutrition of the whole organism.

O. WEBER designates this vitreous infiltration as a hyaloid degeneration. According to him, this generally starts from the smallest arteries, and extends afterward to the parenchymatous cells peculiar to the organ affected. The epithelial cells are said to be first affected, and subsequently the whole wall of the arteries, which thereby becomes of a homogeneous consistency. The process leads to a narrowing of their calibre; the rest of the tissue soon follows the arteries in this determination. WEBER thinks that the protoplasma itself is transformed by some peculiar material which is conveyed to it in the blood, which acts as the originator of the abnormal process. With reference to the cause of this metamorphosis of the epithelia of the arteries, further investigations are necessary in order to render it clear, especially as to whether the epithelial cells of the smallest arteries are really the starting-point; for in similar processes in other organs it can be decidedly proved that they begin outside the walls, whereby the latter project inward in the form of a knob, producing necessarily a narrowing of the calibre of the vessel, as in the arteries of the brain.

Although the metamorphoses above mentioned commonly affect the whole surface of the skin, there are certain regions, as the face and neck, where they principally occur. They increase in intensity with the age of the patient. I have always

found either one or the other of these regressive metamorphoses in all persons past fifty years.

Why the skin of the face suffers most from these changes may find its explanation in the fact that it is exposed most to the changes of temperature, and other injurious external influences; further, the cutaneous muscles whereby the expression of the face is changed are most abundant here, and the skin is placed in various conditions of tension to a greater degree than in other situations. In women the skin of the neck also is considerably affected, from the swelling of that part during pregnancy, and the subsequent rapid disappearance of the same. We may here mention that in studies of this kind we frequently meet with cellular infiltrations, the result of preceding inflammatory processes, and not at all connected with true senile alterations.

Pigment.—This is seen in the form of brown granules, not only within the cells of the rete Malpighii, but, also in the cells of the upper half of the outer root-sheath, consequently in the tissue of the cutis. In the latter it is found either as a diffuse, yellowish-brown coloring-matter, or as granular pigment within the cells. On the legs it very frequently affects the corium, but in the scrotum, on the other hand, it is more often found in the rete Malpighii alone. As a rule, pigmentary accumulations are irregular, and always indicate a previous circulatory disturbance.

Smooth Muscular Fibres.—There is no doubt that the muscular fibres of the cutis participate in these changes, as is shown by the want of contractility of the skin of the aged. I should consider the clouding of the fibre-cells from finely-granular deposits as a sign of such a retrograde action, in which also the spindle-shaped nuclei are shrunken, and the muscle assumes an appearance similar to that described by WEDL in the tensor choroideæ (*Atlas für patholog. Anat.*, 1863).

Epidermis.—The rete Malpighii is frequently greatly thinned, so that its cells are present in but small quantity, and the horny layer lies very near the derma; this is the reason why we are not always able, even in the most carefully-made sections, to obtain the epidermis in connection with the cutis. The cells of the rete Malpighii are mostly shrunken, as men

tioned, frequently also pigmented; they imbibe carmine but poorly, and expand slightly on the addition of acetic acid.

The horny layer is dry and brittle, of a dirty color, and furrowed in consequence of the contraction of the cutis, for which reason also the cells are readily detached, and acquire a fissured appearance. In some places, especially on the back and breast, the cells are heaped in layers on each other, sometimes upon a smooth sub-surface, sometimes resting upon papillæ which thus form wart-like prominences, yellowish-brown or black colored, from the abundant presence of a granular pigment; they are easily removed by scratching with the nail, and generally leave behind them a bleeding corium.

Vessels and Nerves.—The blood-vessels are found dilated without exception, and that, not only between the fat-cells of the panniculus adiposus, but also in the cutis and even in the papillæ, within which they present many serpentine convolutions. The obliteration of the vessels, which many authors have asserted to be the rule in this condition, I have discovered only in those cases where colloid degeneration could be demonstrated.

Hair.—Omitting for the present the consideration of the process of turning gray, we are now most interested in the falling out of the hair, as the prominent senile alteration of the cutis, which natural event must be clearly distinguished from the physiological interchange of hair, whose nature has been already treated of.

The *permanent loss of the hair*, according to KÖLLIKER, is induced by the atrophy of the vascular loop in the hair-papilla. Such an atrophy can be demonstrated in the colloid degeneration of the cutis, but this form is rare. Now, as I have already shown that the capillary system of the whole senile skin, including the papillæ-cutis, instead of being diminished in size, is, on the contrary, enlarged, I think we must seek for the cause of the loss of hair rather in the general retrograde metamorphosis of the skin; for the hair-papilla is but a part of the tissue of the cutis, and is therefore involved in the process. Doubtless the nervous system has also some influence.*

* PINKUS (VIRCHOW'S *Archiv*, 1866) found a difference in the thickness of the deeper layers of the cutis in bald spots; the panniculus adiposus was also thicker

The process of shedding the hair is, without doubt, the same as in the normal, oft-repeated exchange of hair. In fact we have also the same exudation of blastema, which, however, is no longer able to effect a normal elaboration of hair. I found, moreover, in bald skin, perfect hair-follicles, which contained no hair, but at whose fundus groups of darkly-pigmented cells were collected. I could never discover any remnants of the papillæ within this cell-mass. In the great majority of cases of baldness occurring in young people, and in recent cases in others, downy hairs were found within the follicles, which unquestionably were undergoing transformation, as I found the hair-bulb split, and the canal closed beneath—evidences that the hair was preparing to fall out.

I will here mention a condition which is of interest in relation to the arrangement of the hairs. I found several downy hairs (as many as three) coming from one follicle; this was, however, not a concurrence of new and old hairs, whose origin is, consequently, from a single papilla; but the base of the follicle was occupied by three protuberances, and each of these hairs started from one of the swellings, mostly, however, with a split root. Since it frequently happens, in some races (negroes), that several equally vigorous hairs proceed from one follicular opening, I do not doubt that this condition depends on normal relations.

Bald patches of long standing are, for the most part, entirely devoid of hair, so that even the downy hairs finally fall out; the occasion for this I believe to be the above-mentioned irregular deposition of the hair-blastema, which is evidently the result of the advancing degeneration of the skin. I find that the root-sheaths are split, especially the inner; that their horny elements fall off, and, mingled with smegma, form a detritus which surrounds the hair, and very frequently distends the follicle. When the follicle has at last become entirely incapable of producing the hair-blastema in any form, when the base of it is thoroughly destroyed, I might say, the lower portion contracts to where the sebaceous gland opens into it. Thus this outer remaining part of the follicle (Fig. 32) assumes the sole function of the excretory duct of the gland; and the latter, which had formerly opened into the side of the hair-sac, *now pours*

on the atrophic bald patches. These results evidently agree with the above-described thinning of the cutis.

its secretion immediately on the base of the thus shortened follicle.

In the remnant of the follicle we find only sebaceous matter, which, however, is generally accumulated in great quantity, and may distend it, producing that condition which is called *milium*, not only in the gland alone, but also in the hair-follicle.

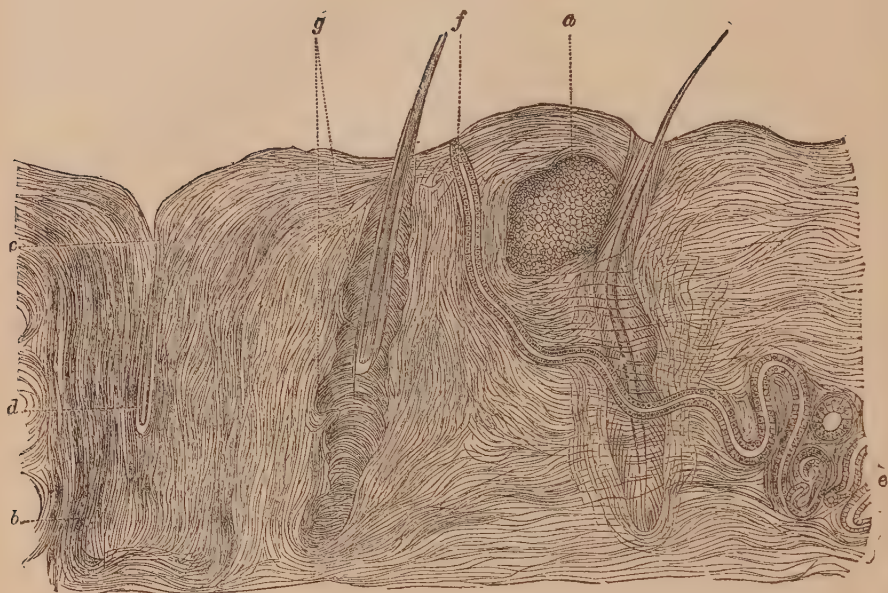
FIG. 32.



Section of a highly-degenerated senile skin from the forehead, in which the shrunken hair-follicles are seen with their contents, consisting partly of epidermis, partly of sebaceous matter, and upon whose base the distended sebaceous glands appear to open.—*a*, Cutis with granular infiltration in spots; *b*, Shortened hair-follicle, with its outer root-sheath; *c*, Horny cells filling the follicle; *d*, Section of an enlarged sebaceous gland.

Now, as to the connective-tissue portion of the hair-follicles (Fig. 33), this retains in a remarkable manner its proper structure, even for a long time after the hair has already fallen out and the cutis around has undergone the granular degeneration. Similar remains of the connective tissue of the hair-follicle are likewise found in other processes, as will be seen shortly in elephantiasis Græcorum, an abundant new formation of cells is found enveloping a normal or wavy bundle of connective-tissue fibres, while the ordinary cutis-tissue has entirely perished. Within this bundle we may find a curled or twisted hair. In this case we see bands of wavy fibres passing from the surface downward, which are interwoven into the structure and appear, on section, as a fibrillated layer covering the surface. These bundles swell with acetic acid, and are thereby distinguished from the surrounding parts.

FIG. 23.



Section of skin from the forehead of an old person.—*a*, Degenerated cutis; *b*, Wall of a hair-follicle, whose connective-tissue bands above separate from one another in loops and terminate in a tract of connective tissue not yet degenerated; *c*, Wrinkle; *d*, Remnant of a downy hair; *e*, Sudoriferous gland, with yellow nuclei; *f*, Obliquely-directed duct of sweat gland; *g*, Accumulation of the cells of the outer root-sheath.

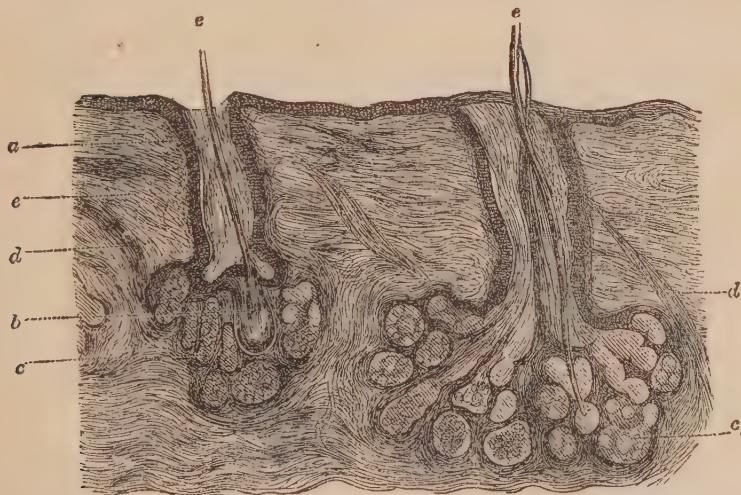
Opinions differ about the other relations of the hair-follicle in baldness. BICHAT could not find any follicles at all in bald skin, while E. H. WEBER and SIMON saw them plainly. As far as my observation goes, the hair-follicles do not perish entirely; they either shrink to their upper third, or the root-sheaths disappear, leaving the connective-tissue portion alone, whose fibres, as above stated, are arranged in broad bands, but which still always permit the cavity of the former hair-follicle to be recognized in their outer portion, which is filled with horny cells, and is seen externally as a wrinkle or ruga. Some remains of follicles can be seen even in sections which have undergone colloid degeneration. In one case I found the upper portion of the follicle distended with horny cells, and separated from that below, which was completely filled with a granular *débris*.

Outer Root-sheaths.—With reference to the outer root-sheaths,

we find their cells also quite normal, and regularly arranged; frequently, however, they are collected in great quantity at the fundus of the follicle, while they fail in the upper portion, and their places are supplied with horny cells. These accumulations at the bottom of the follicle occasion those prolongations and distentions which I have described as met with in lichen exudativus ruber, and other chronic cutaneous affections. These cells also very frequently undergo a change; they do not imbibe carmine, nor swell when treated with acetic acid, and appear in general as though shrunken, and, especially in the upper portion of the sheath, are pigmented. I also found fat within them in the form of drops or fine molecules.

Sebaceous Glands.—The senile skin is, as is known, dry and harsh, which condition is dependent upon changes in the sebaceous glands. These glands are visible to the naked eye as yellowish specks. They undergo various alterations, according as the portion of skin affected has fine or coarse hairs, or is entirely bereft of them.

FIG. 34.



Section of skin from a bald head.—*a*, Hair-follicle, with horny cells, especially on its upper portion; *b*, Downy hair, brush-shaped at its lower extremity; *c*, Greatly-enlarged follicular gland crowded beneath the shrunken follicle; *d*, Arrector pili; *e*, Transverse smooth muscles.

On parts which have only downy hairs, the sebaceous glands are found to be either completely destroyed, or trans-

formed into cysts (*milium, grutum*). But they are also often found to be only enlarged, their contents consisting of brown or yellowish colored smegma. Where there are large hairs, the glands are found to be enlarged without exception (Fig. 34); they either retain their acinous structure and remain as lateral appendages of the hair-follicles, or they are transformed into roundish, oval, or elliptical bodies lying directly beneath the hair-follicle. Finally they reach their greatest extent in places completely bald.

Sweat-glands.—The changes in the sweat-glands are not sufficient to account for the scanty perspiration of old age. I found them in the skin of the old quite as abundant as in the young; all that could be seen were the brownish and yellowish colored masses as described by KÖLLIKER, only in the perspiratory glands of the axilla, and forehead, but which I found also in the glands of other parts, sometimes in great quantity, so that the ducts were distended with them.

I will here mention a position of the ducts of the perspiratory glands which I think is not common, but which I have often met in the forehead of old persons, namely: the orifice is, to a certain extent, pushed to one side, so that it lies far from the body of the gland, and its duct runs to the surface after many windings (Fig. 33).

Fatty Tissue.—The panniculus adiposus is susceptible of far too many variations to permit us to form any general rule in regard to it. When the fat has entirely disappeared I have found the connective-tissue bands thickened.

Wrinkles.—As the cutis becomes thinner, and loses its elasticity from the alterations in the connective tissue and cutaneous muscles, it is thrown into folds by the slightest influences, made uneven, and furrowed. The immediate cause of these rugæ is found in breaches of skin occasioned by the contraction of the muscles over the whole body, the loss of the panniculus adiposus, and the diminution in the cutaneous muscular system, especially in the face.

Wrinkles are either single, that is, forming lines and furrows, or they are multiple, secondary wrinkles occurring near the principal ones, which run out from a primary depression of the skin on different sides, causing the skin to be cut up

with furrows ramifying here and there, and to lose its smooth contour. With this the epidermis and rete Malpighii sink in, to correspond with the irregularities of surface. The wrinkles in the latter line come naturally from the process of degeneration before described.

Besides this form of wrinkles, which are seen as lines and furrows, there is also another variety, which consists of small blind depressions in the skin (Fig. 32). These are nothing but the enlarged orifices of the sebaceous glands, and the openings of the shortened and dilated hair-follicles. There are also larger cavities, which below are connected with sebaceous glands, and then a small *cul-de-sac* of this description becomes filled with sebum, epithelial detritus, and contains also a downy hair.

Extensibility and Rupture of the Senile Skin.—The experiments which C. LANGER has made concerning the fissuring, elasticity, and power of absorption of the senile skin, the results of which he laid before the Imperial Academy of Sciences (*kaiserl. Akademie der Wissenschaften*, 1861), I have myself repeated with the assistance of an apparatus modified by Prof. Hering. These showed that the extensibility, and the power of retraction, as well as the power of absorption, were less in the skin of old age than in that of youth. I was also able to prove a considerable difference in the extensibility of the longitudinal and transverse bands. Moreover, I found that the retraction of the bands, which, after separation, were laid upon a slip of glass, was less complete than in youth; they remained some millimetres stretched. The senile skin, therefore, when once extended, does not regain its original dimensions, which would plainly coincide with the above-described retrogressive process.

Briefly to recapitulate the above-given results: the senile alterations in the skin consist principally in a diminution of the tissue of the cutis which results from a contraction of the same, so that it becomes thinned, and this is generally accompanied with changes in texture which are designated as fine granular degeneration, senile shrinking, vitreous degeneration, etc. Some of the metamorphoses were previously well understood in this and other organs; the condition, however, which I designate as senile atrophy, has not hitherto been observed.

These transmutations are in harmony with the disturbances of nutrition of old age in general, which depress the whole organism.

The destructive process is not uniform, but is more expressed in some places than in others. In the epidermis we have hyperplasiæ, which produce wart-like excrescences; the hornification and shedding of the cells are irregular. As to the hair regarded as an epithelial structure, its falling out depends on a degeneration of the hair-papilla as a constituent part of the cutis, and also on a deficient epithelial production. The hair-sheaths are not completely destroyed, they contract at their deeper portion and the outer half becomes part of the duct of the sebaceous gland. Pigment is found in the epidermis, in the root-sheaths, and also in the cutis.

To the senile changes belongs finally a perceptible diminution in the elasticity and extensibility of the skin.

Unfortunately, the products of cutaneous secretion are as yet too little understood, notwithstanding many investigations, to establish with certainty any connection between these textural changes and any alterations in secretion; but the anatomical conditions given certainly would be sufficient to answer for considerable disturbances in the nutrition of the skin.

3. CANITIES.

Syn. *Turning gray of the Hair*, NEUMANN; *Poliosis*, *Trichonosis Discolor*, *Trichonosis Cana*, *Poliothrix*, *Atrophy of the Hair-Pigment*.—L. D. B.

The shade of the hair depends upon the color of the cortical substance, although pigment-granules cannot be perceived in it nor in the medullary portion.

The hairs may be devoid of pigment from birth and remain so during life, as in albinismus, or they may change their color later, so that hair which was at first of a light hue gradually grows darker, and afterward becomes white in old age. The grayness begins on the temples and spreads thence over the whole head, and then affects the rest of the body. The progress of this is generally slow, but there are cases of sudden blanching of the hair on record, which have occurred after severe nervous shocks. Besides those instances (Thomas More, Marie Antoinette, and others) which were not observed scientifically, many

cases have of late been reported, in which the turning gray has happened suddenly. Thus LANDOIS narrates a case of delirium tremens, in which dark hair became gray the next day after several hours of severe madness. Microscopic examination revealed a great quantity of air-bubbles both in the medullary and cortical substance. The gray places appeared dark with transmitted, and white with reflected light. When the hairs were saturated with ether and turpentine, he observed, as the fluid penetrated them, that the microscopic interstices disappeared, and the hairs assumed another color. He believes that canities stands in immediate connection with some affection of the nerves, which, as they frequently exercise a depressing influence on the whole organism, and can thereby produce chronic or acute diseases, may also occasion a disease or a turning gray of the hair.

PFAFF (*Ueber das menschliche Haar*, Leipzig, 1866) explains the rapid bleaching of the hair in a different manner. He made the following experiments: 1. He submitted a dark hair to the action of chlorine gas under the microscope; 2. He brought chlorine-water in contact with a hair having a distinct medullary canal. The deeper the gas or fluid penetrated, the more was the hair discolored, until, finally, it became completely white. The author believes that, as the chlorine here operates, so there is also an acrid fluid secreted, perhaps a fatty acid (?), after nervous shocks, which may also be secreted from the skin and hairs in severe diseases; he even thinks that he has found quite different odors from the exhalations of the skin and hairs in intense emotions in one and the same person (?). Thus the sweat induced by violent passion when flowing upon the eye burns severely like a solution of nitrate of silver; in a similar manner the acrid evaporation in a severe emotion can cause a blanching of the hair.

There is a case of a soldier mentioned (PELLISCHEK), who went into the battle of Königgrätz with black and came out of the same with gray hair.

The hairs, as a rule, whiten uniformly in their whole length. But some may be light at their root and dark at their extremity, especially in diseases of the scalp. Sometimes the hairs change their color after diseases, so that hair which was previously dark becomes light, and *vice versa*. Cases are also described where the hair becomes curly in its whole length. WILSON observed white and brown curled hair alternating in a boy seven years old. Green and blue coloration of the hair occur only from external causes.

According to PINKUS, the following is the manner of the production of canities: The last-formed portion of hair is first changed, generally from some pigmentary disturbance, and in rare cases from the expansion of the hair and its inflation with air without any change of pigment. The follicle which has once produced a gray portion of hair continues to form gray hair either by the continued growth of the same one, or by a new one developed in the regular typical change of hairs. In rare instances it happens that a portion of colored hair is formed after the hair has been for a month produced without color, and such a change in the manner of nutrition has been known to occur repeatedly on one and the same hair.

In what manner the hair suddenly becomes gray must, for the present, remain undetermined. Without doubt, air enters the hair (LANDOIS); how it arrives there we cannot tell. In black hairs which I submitted to a pressure of thirty atmospheres under an air-pump for several months, I was unable on careful microscopic examination to perceive any air within them, or any change in their color. Nor could I discover any alteration of hue in the quills of a porcupine into whose interior I forced air. Moreover, in the hairs of some animals, especially rabbits, we find the medullary canal partly filled with air, and partly with medullary cells, without the hair appearing otherwise than of one color.

Treatment.—Although dyeing the hair belongs rather to the province of cosmetics, yet we may here speak of a few methods of its manipulation. Nitrate of silver is used largely, in concentrated solutions of equal parts with water. In the ordinary methods of coloring the hair, the epithelial layer alone is affected. If, however, the solution is applied often, and the patient remains in the sunlight after the application, the cortical portion also is tinged. In the "*henna*" (an Eastern preparation, POLLAK) we have an excellent hair-dye of vegetable nature, which, in connection with indigo, will give the most varied hues to the hair, as red, flaxen, brown, or black. Extract of nut-shells, lead, iron, and substances containing tannin, are also employed.

In the grayness of blond persons PFAFF gives sulphur internally, and recommends frictions with the yolk of an egg,

which, as is known, contains sulphur and iron. In the early blanching of brown hair, he advises iron, and the following pomade locally:

R. Ol. ovorum rec. press.,*
 Medul. oss. bovis, āā, ℥j.
 Ferri lactatis, 3 ss.
 Ol. cinnamomi, ʒj.
 M. Ft. unguent.

Acetate of iron in connection with sulphur is also used once or twice weekly (EBLE).

4. ALOPECIA.

Syn. *Atrophy of the Hair, Loss of the Hair*, NEUMANN; *Calvities, Ophiasis, Athrix, Trichorrhœa, Defluvium Capillorum, Baldness; Alopecia Areata, Circumscripta, Occidentalis, Porrigo Decalvans, Tinea Decalvans, Vitiligo Capitis, Phytoalopecia, Trichosis Area, Pelade, Teigne Achromateuse, Tinea Tondens, Bald Ring-worm*.—L. D. B.

Deficiency of hair (*atrichia*, or *alopecia adnata*) may concern either the entire surface, or only single portions; it may also remain during the whole life, or be only temporary, the hairs growing again in the first and second year. Lack of hair often occurs conjointly with absence of teeth. Moreover, places which are commonly provided with hair sometimes remain hairless, or are covered with a fine and poorly-developed crop (*oligotrichia*). This want of hair is occasionally seen in animals as well, more especially in a certain species of horse found in Little Thibet, on whose hide not a trace of a hair or a hair-follicle can be discovered; the same occurs in a race of African dogs; also hogs of that country.

Acquired baldness (*calvities, alopecia senilis*) is seen principally in old age, but may affect young persons (*calvities præmatura*). The hair begins to fall out first on the crown of the head and the temples, while that on the back of the head and the beard may continue to grow during the whole of life. Grayness usually precedes this falling out. It is asserted by many (KÖLLIKER) that the falling out of the hair in old age depends upon an obliteration of the capillaries of the hair-papillæ, also an atrophy of the cerebro-spinal and vaso-motor nerves,

* The oil of eggs here used is obtained by expression from hard-boiled yolks. This makes the pomade expensive.—L. D. B.

similar to the obliteration of the vessels of the iris which precedes the contraction of this membrane (HENLE).

According to BICHAT, there is an atrophy of the hair-follicles in old persons; according to E. H. WEBER and SIMON, the follicles merely become smaller, and contain downy hairs. I have examined numerous bald patches from old persons, and have found both the hair-follicle and the root-sheaths shrunk, the cells of the outer one at first increased, and afterward diminished in number, or with a fatty degeneration and surrounding a fine hair, whose root is likewise greatly thinned and pigmented, while the sebaceous glands are very considerably enlarged, and are located beneath the fundus of the hair-sac. PIN-KUS (*Virch. Arch.*, Bd. 43) has made some valuable investigations on this subject, to which we will make frequent reference in this chapter; he found a difference in the thickness of the lower layer of the cutis in every case, a widening of the fibrous bands, and an increase of fat around the hair-follicle.

Calvities præmatura, that is, the falling of the hair in young persons, is not generally preceded by grayness; the affection is often hereditary. The hairs come out first on the crown of the head, accompanied with an increased formation of scales; the skin becomes thinner and tense, while the remnant of the scalp may have entirely normal hair.

Defluvium capillorum signifies the falling out of the hair in consequence of internal diseases, for instance, after typhus fever and the acute exanthemata; also after or in consequence of dyscrasic affections, such as syphilis; or, finally, from a general disturbance of nutrition. That the latter has great influence upon the growth of the hair, is proved by various experiments. MAGENDIE fed a dog exclusively on cheese: the animal remained apparently healthy, but lost his hair completely, probably because this food did not furnish to the blood the material necessary for the formation of hair.

Alopecia is a loss of hair from local causes; thus, from diseases of the hair-follicles (acne, sycosis), from parasites (favus, herpes tonsuraus), from seborrhœa, from affections of the nerves, therefore, from such diseases as induce nutritive disturbances, and, at the same time, a shedding of the hair. In these, the hairs themselves may be altered in various ways, they may be

wanting in pigment, thinned, or split, both in their length and at the extremities, etc.

Inflammation of the hair-follicles shows itself in the form of papules and pustules, and has already been considered under Acne and Sycosis; as a rule, the hairs are reproduced, except where the infiltration has destroyed the follicle.

The falling of the hair has, from ancient times to the present, received various designations, according to its different forms.

Madecsis, or *maderosis*, signifies a transient loss of hair quickly followed by downy hairs.

Phalacrosis is when it begins on the crown.

Ophiasis, that extending from the occiput toward the ears.

Opisthophalacrosis, bald occiput.

Hemiphalacrosis, one-sided baldness.

Anaphalacrosis, baldness extending from the forehead toward the crown.

In *herpes tonsurans* the hairs break off, but grow again as soon as the parasite is destroyed. In *favus* the hairs lose their lustre, become harsh and brittle, and separate at their root and extremity into fibres, brush-form; their elements are crowded apart by the ingrowing fungus, and they finally fall out, and are only replaced when the hair-papilla has remained intact. If, however, the mass of favus is very great, its long continuance destroys the papillæ, and permanent baldness results. This will be more fully spoken of under parasitic affections.

In *lupus erythematosus* of the hairy parts the hairs are lost and are not regenerated.

After *eczema* and *seborrhœa* the hairs grow again. The loss of the hair in *syphilis* is either in consequence of a local seborrhœa, the scalp being covered with a thin, dirty-yellow crust of fatty matter, which, when removed, displays numerous projections on its under surface (plugs of sebum from the orifices of the follicles), or the hairs fall out as a result of the syphilitic dyscrasia. A loss of the eyelashes and eyebrows in *congenital syphilis* is probably the result of an intra-uterine affection of the Meibomian glands, a *seborrhœa syphilitica*.

The so-called *pityriasis amianthacea*, or *asbestina*, which is accompanied with a formation of scales on the hairy parts, is,

as has been given on page 70, likewise only a seborrhœa connected with a loss of hair.

PINKUS (VIRCHOW's *Archiv*, B. 44) has described more fully this form of alopecia. He distinguishes the pointed hairs (*Spitzenhaare*), such as show no mark of the scissors (have not been cut), and are at the utmost only two inches long. These have but a slight typical growth, are found at the border of the hairy scalp, have a slower development than the rest of the hairs, and remain only from four to nine months; while the cut hairs (*Scheerenhaare*) (such as show the mark of the scissors), or, the long hair in women, reach the age of from two to four years. The proportion of the *Spitzhaare* to the others is constant, as also their daily loss.

Between the eighteenth and twenty-sixth years of life, the period when the first stage of alopecia generally appears, the minimum of the normal loss of hair varies between 13-70, the maximum 62-203, the mean being from 38-136. The proportion of the *Spitzhaare* to the whole loss is further essentially increased, without the absolute number of hairs shed being much above the normal.

This stage of the alopecia is characterized at first by a smaller, and afterward by a larger, number of the hairs losing their normal increase in length, so that the later growth has a shorter duration than the preceding. It lasts from two to seven years, begins shortly after puberty, and then progresses rapidly, becoming slower in the middle of the twentieth year, and the later it begins the less is the daily loss of hair. Even when this stage leaves no baldness behind it, the duration of the life of the hairs is yet short. Therefore, in order to see whether the shedding of hair is pathological or not, one must count the hairs which come out in combing for at least four days consecutively, and determine the proportion of the *Spitzhaare* to the *Scheerenhaare* which have fallen out. A ratio of one to eight, with an average length of the hair of the head of five inches, is abnormal. As the first stage of the alopecia is marked by a decrease in the *length of the hairs*, so the second is characterized by a *diminution in their thickness*. As a rule, the diameter of the hairs of any region varies but little, certainly in the ratio of 5:4, and the changes can be easily studied on the hairs of the fingers, whose length amounts to from two to nine lines, and whose typical continuance is from three to nine months. The thicker the hair is, the greater its length, and the longer its life; it may remain seven to nine months. The greater the blanching of the skin, the more is the diameter of the hair decreased, until, finally, downy hairs alone are found. This diminution in thickness takes place most rapidly on the scalp, and that especially within a strip a line to a line and a half broad, beginning three-quarters of a line from the anterior border of the hair, and extending back to the crown and the rest of the middle portion of the head; the most anterior border of the hair resists the longest, especially near the middle line. PINKUS counted the hairs falling out in a person for eight days, and found that one hundred and eight fell out on the healthy side of the head, and

two hundred and twenty-seven on the affected portion, which was, however, half smaller than the healthy part. The relation of the *Spitzhaare* to the *Scheerenhaare* on the healthy side was one to four; on the affected, one to one.

Falling of the Hair from Nervous Diseases.—VOIGT has proved that the loss of the hairs in old persons occurs in a certain anatomical order, which is strictly observed in special localities following the ramifications of particular cutaneous nerves. Experiments on rabbits, in which the ischiatic nerve had been severed, showed that the hairs had not grown on the extremity operated on four months after the section of the nerve, while the growth of hair proceeded regularly on the sound limb (STEINRÜCK (*De Nervorum Regeneratione*, Berlin, 1838). ROMBERG noticed that the hairs fell out in local paralysis of the face; a case is also described (RAYATON) in which amaurosis of one eye, with a simultaneous loss of the hairs of the scalp, eyebrows, and eyelashes of the affected side, followed a concussion of the head (SIMON). Continuous mental exertion and severe and depressing apprehension may, moreover, exercise considerable influence upon the loss of the hair.

ALOPECIA AREATA—*Area Celsi*; *Alopecia Circumscripta* (FUCHS); *Porrigo Decalvans* (WILLAN); *Alopecia Occidentalis* (WILSON); *Vitiligo Capitis* (CAZENAVE); *Phytoalopecia* (GRUBY).—This disease, which has been reckoned by some authors among the parasitic diseases, makes its appearance as follows: The hairs fall out in circular or oval patches, especially on the scalp, the bald-spots appearing polished and hard; the hairy portions are covered with scales, and a slight force serves to remove the hairs. Sometimes the whole head is bereft of hair, as also other parts, as the eyebrows, axillæ, and genital regions. The hairs become dull, wanting in pigment, and split at the extremity. In the further course of the disease they grow again, but are at first colorless (*lanugo*). These are generally replaced by more vigorous ones in the course of one or two years. GRUBY was the first who described a fungus as existing in the disease in question; this is said to surround the hair to the height of from half to one and a half line. KÜCHENMEISTER, MALMSTEN, ROBIN, WEDL, BAZIN, and HEBRA, also consider it a parasitic disease. I have seen about twenty cases; and, although I have

carefully examined the hairs and have placed them under cultivation, I have never been able to discover any fungus, and must therefore favor the view of CAZENAVE, DEVERGIE, BÄRENSPRUNG, HUTCHINSON, VEIEL, and BOECK, that this is not a parasitic affection.

This form occurs principally in young persons, more commonly in those who are poorly nourished; the hairs fall out in large circular patches, and the skin, further than the above-mentioned changes, shows no alterations either in thickness or sensibility.

RINDFLEISCH (*Archiv für Dermat.*, 4 Heft, 1869) thinks he has found the anatomical, therapeutical (!), and even etiological (!) explanation of this disease. He says that all the hairs extracted are wanting in a root: this separation of the hair from its root is caused by fatty molecules, which are found in the extracted portion. The root-sheaths, that is, that portion of them from the sebaceous glands to the external orifice, come away with the hair; the hair adheres firmly to its sheaths to the junction of the first and middle third of the hair-sac; that is, reckoning from the base of the follicle to the orifice of the sebaceous glands. Here also RINDFLEISCH finds these same fat-molecules. But from the papilla there are only embryonic cells given off, which, as the hair is separated from the root-sheath, are collected, and form a constant swelling between the hair-bulb and the narrow portion of the follicle on the other. He expects to cure the disease with tincture of capsicum and glycerine. I have used this remedy in one case, but without success.

There is still another form of loss of hair different from this, in which there are sharply-defined spots, circular, varying from the size of a lentil to that of a small penny; this is well designated by the name, chosen by FUCHS, of *alopecia circumscripta*, or, better, *orbicularis*. The hairs here are in the same condition as in *alopecia areata*; but the skin, on the contrary, is depressed and atrophied, and the sensibility is diminished, so that a needle is felt only when pressed in deeply. The prognosis in this form is absolutely unfavorable; the hairs do not grow again.

SPIESS describes a peculiar form of falling out of the hair; it becomes atrophic, especially at the bulb, whereby the nutrition of the whole hair is rendered impossible; at the same time alterations take place in the parts surrounding the bulb, the innermost decompose with the production of air, so that interstices are formed in the hairs containing air, whose walls continually grow thinner. If the atrophy of the root is far advanced, the hair

may fall out without breaking off: but, if the bulb has not yet suffered such a loss of nutrition, the hairs break off at the places of swelling, which can no longer resist the enclosed air.

Yet another change in the hair-shaft may here be mentioned. Two, three, or more hairs of the upper lip or axilla will be noticed for their light color and sharp outline, and around the hair there will be swellings, at which the hair bends when handled, and breaks on harsher treatment, appearing as if singed off. The microscopic examinations which I made showed the cortical substance always fibrillated, without my being able to perceive any foreign substance in it. In a single case, which was demonstrated to me by a pupil of mine (D. PULLER), was I able to perceive *psorosperms*, the same formations which LINDEMANN found in the hairs of a girl who for a long time had suffered from severe pains in the head, and which LEBERT has once seen in the hair of a favus-patient, and which have also been found in the liver, etc., concerning whose nature we are not yet certain.

BEIGEL also describes similar knob-like excrescences, which come in the hair from collections of air. According to my view, such protuberances are not seldom occasioned by deficient nutrition of the hair-shaft, and I feel the more assured in this opinion because I have seen them most frequently in diseases of the hair-follicles (*sycosis*); on the other hand, they may be produced by external causes which effect a rapid drying of the cortical portion, and in the axillæ the profuse sweating with its fatty acids may occasion it.

There are many other causes which are thought to produce a shedding of the hairs. Misuse of mercurial preparations is thus charged with it, which, however, is erroneous, for here the falling out is the result of the syphilitic dyscrasia in part, and also the local seborrhœa. The vapors of lead and arsenic, the immoderate use of spirituous liquors, profuse sweating from too warm covering of the head (? PFAFF), also tension on the hair from various modes of dressing, may favor its falling out. That women are less often bald than men may be explained by the smaller production of hair over the rest of the body, so that the hair-material is furnished to the head in greater quantity in them than in men.

Prognosis.—The prognosis depends upon the above-given causes, and varies according to the different agencies at work, and the duration of their action. Thus the forms which we have placed under *defluvium capillorum* (after typhus fever and the exanthemata), as also other forms of alopecia, from parasitic diseases, eczema, and seborrhœa, and even those which result from nervous affections (*area celsi*), have a favorable prognosis. The elements for a prognosis in one form of alopecia have been given us by PINKUS. It is always advisable to examine microscopically the hairs which fall out, and also those on the border of the bald patch, in order to form a judgment as to the thickness of the root and the shaft, also of the condition of the cortex, etc.

Therapeutics.—As in every disease in which we can afford but little assistance, there have been also a great number of specific remedies vaunted for this affection, some of which are doubtless useful. The applications which cure favus, herpes tonsurans, and eczema, are at the same time preventing the loss of the hair. When a superabundant sebaceous secretion is the cause of the falling out, the treatment varies according as there are crusts or scales present, and we may expect success from frictions with brandy, cold shower-douches, ointments of white precipitate, zinc, or lead, each a drachm to the ounce. In reduced persons good nourishment, and the use of preparations of iron and quinine, will also have a beneficial influence upon the nutrition of the hair. The above ends my list of remedies, and I therefore give the experience of other authors (PFAFF and PINKUS).

The former, in cases where microscopic examination shows the root of the hair poor in pigment and the body of the hair yet to contain it, orders daily frictions of the head with beef-marrow, or neat's-foot oil, with balsam of Peru, and preparations of iron internally. If wart-like protuberances of the epithelial layer are found on the hairs which have fallen out, or on those taken from the margin of the bald spot, they are occasioned by the secretion of an acrid sweat, which injures the hair (?). In this case, we order the remedies for profuse sweating of the scalp, such as, wearing a perforated hat for ventilation, washing the head with sage-tea or quinine, together with the diligent cleansing of the scalp.

PINKUS made the following experiments with remedies on the hairs of the fingers :

1. Solut. Fowleri, 3 i; aq. destill., 3 iij, M.; frictions were made with this for half a year; the hairs whose extremities were before broken off became normal.

2. Tinct. hellebori alb. 3 j; tinct. benzoini, 3 j; tinct. myrrhæ, 3 iij; spir. rectific. 3 vj, M.; hairs which were without a point, became normal after half a year.

3. Acidi muriatici, 3 j; aq. destill. 3 j, M.

4. Veratrin. gr. j; spirit. rectificat. 3 j, M.

5. Tinct. hellebor.

6. Tinct. cantharidis, 3 j; spirit. rectific. 3 j, M.; the hairs sometimes break in consequence of the friction, but later become normal.

7. Olei sabinæ, gtt. xv; spirit. rectific. 3 j, M.

8. Sodæ carbonatis, 3 ij; adipis, 3 ij, M.

9. Solution of common salt.

10. Coniin. gtt. iij; spirit. rectific. 3 ss, M.

11. Tinctura ergotæ.

12. Tannin, gr. x; alcohol, ol. amygdal., āā, 3 j, M.; or, tannin, ʒiv; ung. 3 j. The head to be cleansed with this twice a week.

Arsenic, veratrin, cantharidin, and savine, are absorbed by the hairs, and make them brittle; especially is this the case with ol. sabinæ; the rapidity of growth is diminished, and the typical length of life increased. It produces pain in the head and sleeplessness. It is used in the form of a salve, or dissolved in water. The ol. sabinæ, ʒv. ad xxx, alcohol 3 j, is used with success; the hair loses, however, its softness, and the color becomes somewhat dirty gray or brown; the smell is unpleasant, but a little oil of cinnamon can be combined with it.

Bicarbonate of soda is a preferable remedy (!), only it turns the hair somewhat brown.

The solutions should be rubbed in, or applied on compresses, and the scalp covered with a cap of oiled silk.

[TILBURY FOX is quite positive as to the parasitic origin of some forms of *alopecia areata*, or *tinea decalvans*, as he styles it; but he also recognizes a non-parasitic variety, where there is atrophy of the entire thickness of the skin. For what he considers the parasitic form, he blisters all the patches that are on the increase with blistering-fluid, twice or more. He extracts a few of the hairs around the patch, and rubs in, for some little time, bichloride-of-mercury ointment (gr. ij-v. ad 3 j), and finally stimulates with nux-vomica and cantharides ointment or lotion; he says that, by perseverance in these measures, he scarcely ever fails. He also gives iron, cod-liver oil, bitters, etc., as occasion requires. HARDY accepts the parasitic origin from GRUBY and BAZIN; HILLIER and SQUIRE also consider the disease to be of this nature. The supposed vegetable parasite is called the *microsporon Audouini*. On the other hand, many, who now study the

affection more carefully, hold the opposite opinion. HEBRA has changed his views, and no longer considers the disease as of fungous origin (VIRCHOW'S *Handbuch*, III. B., II. Th., I. Lief., 1870); MORIZ KOHN the same; WILSON considers it a neurosis; NAYLER is of the opinion that it should not be considered a parasitical disease.

I have examined many hairs from different patients with alopecia areata, and have never been able to discover the fungus, nor have I even after cultivation of the hairs in potash or glycerine, when favus, pityriasis versicolor, and herpes tonsurans, treated in like manner, gave abundant evidence of cryptogamic development. I believe the non-parasitic view is rapidly gaining ground; indeed, I have never met personally with any one, except Messrs. BAZIN, HARDY, and FOX, who maintains its fungous origin. The errors, I take it, have arisen in two ways: 1. Either by confounding the alopecia resulting from preceding parasitic affections (favus and herpes tonsurans) with the true alopecia areata; or, 2. What is quite as probable, the entrance of a foreign fungoid element, either removed by chance from the skin, or attaching itself to the specimen from an extraneous source: this, of course, may be a cryptogam of any of the many varieties with which we are constantly surrounded, it may be the elements of some of the parasitic diseases known to us, or, again, it may be the fungus of common mould, or the penicillium glaucum, etc.; any one familiar with the microscopic cultivation of these delicate organisms will appreciate this difficulty. The only delineations of the fungus of this disease are the one of BAZIN, referred to and copied many times, and those recently furnished by FOX.

Internal treatment should never be neglected in any of the forms of alopecia. If there is the slightest syphilitic taint, it must be removed; nervous exhaustion will often be found, requiring powerful tonics and change of scene; dyspepsia will not rarely be found at the bottom of the trouble in question; anæmia and chlorosis will demand their appropriate remedies; menstrual disorders and leucorrhœa require often to be treated; indeed, the hair but indicates the *tone* of the whole system—how often do we find partial baldness and a poor development of the beard in weak, strumous subjects!—would we then be successful in treating alopecia, let us see to it that the blood is in a normal state, and that the nerve-supply is likewise in a proper condition. Now, there is no question that, when all these matters have been attended to, the administration of arsenic will expedite the cure, but to prescribe it alone, and at random, simply because there is baldness, is as irrational as it is hurtful to physician and patient. It is obvious that these remarks do not apply to senile baldness, which is directly dependent on a retrograde metamorphosis of the skin, coincident with the general decadence of the system at large, attended with structural lesions, which no treatment of any kind will affect.

Local treatment of baldness is mainly stimulating, a semi-erythematous state of the skin being kept up, which, by the increased supply of blood, affords more nutrition to the hair-follicles. Blistering is occasionally of service in smaller patches. Cantharides is a principal ingredient of

most hair-tonics. WILSON recommends washing the scalp every morning with cold water, drying it with a coarse towel, and subsequent friction with a stiff brush, till redness is produced; some stimulating application is then used or rubbed in for five minutes, his favorite prescription being from two to four drachms of the following "unguentum stimulan," mixed with an ounce and a half of sweet-scented pomatum:

℞. Pulveris cantharidis, ℥ vj.
Adipis præparati, ℥ iij.

M. Macera, cum leni calore, per horas viginti quatuor, et per chartam bibulam cola.

He also uses various stimulating soaps, juniper-tar, petroleum, sulphur, and carbolic. He considers the following the best lotion:

℞. Olei amygdalæ dulcis, ℥ j.
Liquoris ammoniæ fortius, ℥ j.
Spiritus rosmarini, ℥ iv.
Aquæ mellis, ℥ ij.
M. Ft. lotio.

TILBURY FOX has found tincture of nux-vomica a most efficient local remedy, in combination with distilled vinegar and tincture of cantharides. NAYLER recommends the occasional application of a mustard-poultice. BURGESS and NELIGAN both recommend the following ointment of Dr. COPLAND:

℞. Adipis. præparati, ℥ ij.
Ceræ albæ, ℥ ss.
Lento igne liquefac, et adde
Balsami Peruv., ℥ ij.
Ol. lavandulæ, ℥ xij.
Misce donec refrigerint.

BURGESS, however, prefers the local use of vapor of sulphur and iodine to all other remedies. Many recommend frequent shaving; and, as warmth assists the growth of the hair, a wig is often of service when the hair first begins to fall off (NELIGAN).

RINDFLEISCH (*Archiv für Derm. und Syph.*, 1869) gives:

℞. Tinct. capsici,
Glycerini, aa, ℥ ij.
M. Ft. lotio.

ERICHSEN has occasionally seen infusion of tobacco succeed when other means have failed, but says he has found nothing more useful than the continual shaving of the head until the hair resumes its natural strength and color.

I have used with good success a wash after the formula of my father, Dr. H. D. Bulkley, thus:

℞. Tinct. cantharidis,
Tinct. capsici, aa, ℥ ss.
Olei ricini, ℥ j.
Aq. Colognien., ℥ ij.
M. Ft. liniment.

I take from my note-book one more valuable wash, the receipt of which is given by Fox (*Practitioner*, March, 1870):

℞. Tinct. nuc.-vomiceæ, $\frac{z}{3}$ ss.
Tinct. cantharidis, 3 vj.
Glycerini, 3 ij.
Aceti destillati, $\frac{z}{3}$ iss.
Aq. rosæ, ad $\frac{z}{3}$ vj.
M. Ft. lot.

When the hair-follicle is destroyed by local injury, no treatment can replace the lost portions; burns and scalds, ulcerations with loss of tissue, as also favus, produce permanent baldness. I have seen the hair thin out and become very brittle and lustreless from curling, or from the modern practice of "crimping" the hair. Treatment is of no avail while the habit is persisted in.—L. D. B.]

CLASS VI.
NEW FORMATIONS.

A. DIFFUSE NEOPLASMATA.

LUPUS.

Syn. *Wolf*, *Herpes esthiomenos*, *fressende Flechte*, NEUMANN; *Lupus vulgaris*, *Lupus vorax*, *Herpes exedens et non-exedens*, *Noli me tangere*, *Dartre rongeante*, *Esthiomène serpiginieuse*.—L. D. B.

THERE are two main varieties of lupus: 1. *Lupus vulgaris*, seu *Willani*; 2. *Lupus erythematodes*, seu *Cazenavi*.

a. LUPUS VULGARIS.

By this name is designated a cellular infiltration of the cutis, which does not tend to tissue-formation, but, after an uncertain time, leads to a contraction or ulceration of the skin by a process of fatty degeneration and molecular destruction.

Lupus vulgaris appears in the form of—

a. *Brownish-red spots*, from the size of a pin's-head to a hemp-seed or a bean (*lupus maculosus*).

b. *Papules, or nodules*, elevated above the skin, also of brownish-red color, in size from that of a pea to a hazel-nut (*lupus tuberculosus, nodosus*).

c. *Infiltrations*, the skin appearing of a color similar to the preceding varieties, and covered with lamellæ of epidermis (*lupus exfoliativus*).

d. *Atonic ulcers*, resulting from a softening of the infiltrations (*Lupus exulcerans*).

e. *New formations*, rising above the skin, and frequently involving large portions (*lupus hypertrophicus*).

f. *Large ulcers*, extending peripherally (*lupus serpiginosus*).

These varieties of lupus, as we shall hereafter see in the anatomy of the disease, are only different stages of development of one and the same morbid process; lupus maculosus representing the first, and the others forming the later stages. Thus the speck develops to the papule and nodule as the cell-infiltration increases, and this then to the ulcer, etc.

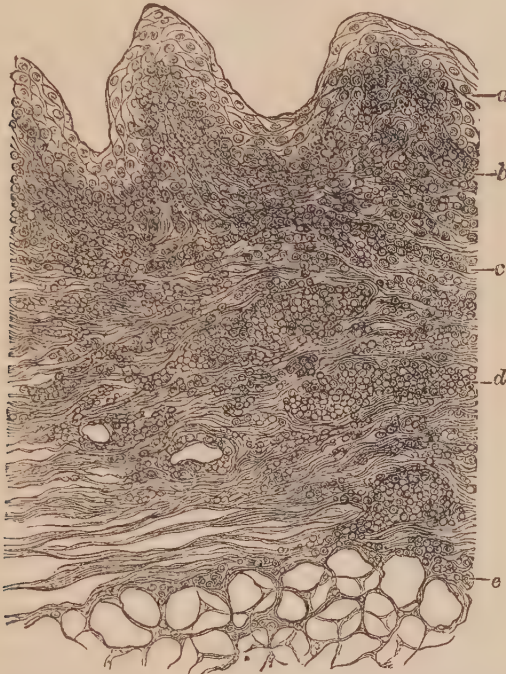
Lupus vulgaris attacks most frequently the face, nose, cheeks, buttocks, extremities, ears, and more rarely the trunk. The cartilages, fibrous textures, and the mucous membranes, are its favorite seats, especially the mucous membrane of the lips, the hard palate, throat, and larynx.

Anatomy.—Besides the minute descriptions given by WILLAN, BIETT, CAZENAVE, and especially HEBRA—which, however, have reference more to the outer form than to the true nature of the disease—we have the accurate anatomical studies of WEDL, BERGER, POHL, AUSPITZ, RINDFLEISCH, and others.

The histological condition varies according to the stage of the morbid process, but, in the main, consists in a cell-infiltration of the corium. There is no doubt that the primary affection in lupus vulgaris has its origin in the derma, and not in the sebaceous glands (*adenoma* of RINDFLEISCH), while in lupus erythematodes the latter are first attacked. The cell-proliferation, which makes its way toward the surface, gives the character to lupus maculosus, tuberculosus, etc.; if this hyperplasia extends deeply, we have from the first an increase in the mass of the tissue. In general terms, the changes are as follows: the cells of the rete Malpighii have granular contents (fatty or pigmentary molecules), the corium becomes spongy, and its volume is increased, the papillæ are a little elongated, and increased somewhat in breadth, and in some places remain normal; the fibrinous meshes are larger than in the healthy skin. Within them we find a net-work of delicate connective-tissue fibres (AUSPITZ, *med. Jahrbücher*, 1864). The corium is in places moderately filled with uniform roundish and oval cells. The subcutaneous connective tissue becomes thickened; the fat-cells are either less abundant, or have entirely disappeared. The sweat-glands are preserved, capillaries and lym-

phatics enlarged, sebaceous glands present in small numbers. Similar infiltrations are found in the subcutaneous cellular tissue.

FIG. 85.



Section of a lupous tubercle from the cheek.—*a*, Rete Malpighii; *b*, Cell-infiltration of the papilla; *c* and *d*, Accumulations of cells in the upper and lower layers of the cutis; *e*, The same in the panniculus adiposus.

Etiology.—Syphilis and scrofula are asserted by many authors to be the sole cause of lupus.

As to the former, experience teaches us, as also the course and the treatment of the disease, that the processes are essentially different from each other, for lupous children generally come from parents who are perfectly healthy. The course of the eruption in lupus is slower than that of the syphilides, and antisiphilitic remedies have but little influence on lupus.

As to scrofulosis, it cannot be denied that a large number of the forms of lupus are directly associated with glandular enlargement, caries, and necrosis; especially in children is it true that lupus depends on scrofula. But the latter may be

removed while lupus continues to progress by slow advances beyond puberty; and, again, patients, who in childhood were scrofulous, may be affected with lupus after they have become apparently healthy. We often see papules and tubercles of lupus in the periphery of scrofulous cicatrices; frequently also the antiscrofulitic treatment alone suffices to cure lupus. But a large part of the cases of this disease occur in persons who are otherwise healthy and strong, and in whom we can discover no other disturbances.

Diagnosis.—The characters given will suffice, in most cases, to establish the correct diagnosis. Nevertheless, it is quite possible to mistake lupus for the following diseases: 1. Lupus erythematodes; 2. Syphilis; 3. Eczema; 4. Psoriasis.

The distinction between *lupus vulgaris* and *erythematodes* we will give when speaking of the latter.

Between *lupus exulcerans* and *tuberculosis*, and *syphilis*, the diagnosis is often difficult. The following points are distinctive: Syphilitic tubercles are hard; they develop rapidly, they never make their appearance on one place alone, and are, as a rule, combined with other forms of eruption. Those of lupus are generally more soft, more slowly developed, and are confined to small portions of the skin, as the nose and cheeks. Syphilitic ulcers likewise run a more rapid course than lupoid. But other tissues should also be examined, as the mucous membrane of the nose, pharynx, tonsils, and uvula; also the bones of the nasal passages and palate, which are more frequently involved in syphilis than in lupus.

Lupus exfoliativus may be mistaken for *eczema squamosum*. The rapid course of eczema differs greatly from the more tardy one of lupus; the infiltration is always deeper in lupus than in eczema; scars remain after lupus, never from eczema; reddish-brown spots, or papules, may frequently be seen around the periphery of a lupus, which will give greater certainty to the diagnosis.

Lupus can scarcely be confounded with *psoriasis vulgaris*, because the quantity of scales in lupus exfoliativus is small, and after their removal the corium is found but little infiltrated, and does not readily bleed. Further, lupus is commonly confined to small regions; psoriasis, on the contrary, is extensive.

Lupus tuberculosus may resemble *acne rosacea*; but the character of the tubercles, the presence of comedones and pustules in acne, and, finally, the dilated veins, will serve to mark the latter.

Lupus need not be confounded with *epithelial carcinoma*, if we have regard to the indurated periphery, the rough, uneven character of the base of a cancer, together with its deep, rapidly-extending ulceration.

Prognosis and Course.—*Lupus* may begin in earliest childhood, from the age of three years; at first there are reddish-brown maculæ scattered here and there, which may easily be passed by unnoticed. These are found more frequently on the extensor surfaces of the elbow and knee, and on the back of the hand, as flat papules, from the size of a pea to that of a small cent, covered with scales; becoming confluent, they may form larger papules, which not infrequently disappear spontaneously, leaving behind them a copper-colored, wrinkled scar. Quite often, however, more are developed, which sometimes include a whole extremity and affect the body. This development requires several years, and its extension is greatest during puberty. Occasionally the spots and papules disappear spontaneously, and new ones are formed on their periphery, which ulcerate, and we find a central cicatrix surrounded by a serpiginous ulcer. The nose and cheeks, which are the favorite seat of lupus, are often destroyed, the nasal cartilages disappearing, and the nose being drawn upward by the contracting cicatrix; great disfigurements are caused by the loss of the alæ, apex, and sides of the nose; ectropia results from lupus of the cheeks; also deep rhagadæ in the corners of the mouth and on the lips, hoarseness and loss of voice from lupus of the larynx, and difficulty of hearing when the external ear is affected. The extremities lose their mobility from lupous scars, especially the fingers, which may be held flexed, or extended for life, by the contractions following lupus. Fortunately, such consequences do not appear until lupus has long existed, and therapeutical intervention can achieve a better result. *Lupus* is dangerous to life only in those rare cases where epithelioma is developed from it after lasting for years. Besides the cases of this on record, there are two noted by HEBRA, one of which occurred

in a man forty-six years old, who, from childhood, had had a lupus of the cheek, in whom an epithelioma developed on the lupoid base, which was completely cured by caustics; other cases have ended fatally.

Therapeutics.—Of the internal remedies for lupus we mention only iodide of potash and cod-liver oil, or the iodized cod-liver oil (iodinii puri gr. iij; ol. jecor. aselli ℥vj. M.). The first, however, is an uncertain remedy, and, when it does have any effect, it is only after a long time; the latter is especially serviceable where marked scrofulosis produces the lupus. We have had cases of this kind where the internal and external use of cod-liver oil at the same time has caused a lupus to disappear entirely. The *external treatment* is the most important, and consists partly of such means as induce absorption, and partly of caustics. To the former belong the emplastrum mercuriale and glycerine with iodine (RICHTER): ℞. Iodinii puri, potass. iodid., āā, ʒj; glycerini ʒij. M.

The lupus should be brushed over with this solution three times a week, and covered with gutta-percha paper, that the vapor of the iodine may act upon the skin. The pain caused thereby is considerable.

Mercurial plaster is especially suited to lupus maculosus, exfoliatus, and the lupus erythematodes to be hereafter described. It cannot be foretold whether this will suffice to cure; it should be tried, especially in children and sensitive persons, before caustics are resorted to.

Caustics.—Nitrate of silver (*lapis infernalis en crayon*).—This is sharply pointed and thrust into the lupous tubercles until its progress is resisted by firm tissue; it is to be bored horizontally through the whole portion of the lupus, so that the various portions are separated from their attachment. These cauterizations are made twice a week; the pain lasts three or four hours after the operation. The cicatrices resulting are generally flat and shining. Nitrate of silver is applicable to all forms of lupus, and is to be preferred to all other caustics, especially in lupus of the face.

Concentrated solutions of nitrate of silver—a liquid composed of equal parts of caustic and water—is useful in flat, ulcerating lupus, particularly after it has begun to granulate.

Caustic potash (*kali causticum*), in substance, is an intensely powerful caustic, which attacks not only the parts to which it is applied, but also those adjacent, a concentrated solution being formed by the blood, pus, or serum of the tissues. The pain during its action is more severe than with nitrate of silver, but of less duration. The scar left by potash is generally hard and fibrous, and is therefore suited rather to lupus on extended portions of the body, and only used on the face when the nose, for example, is in danger, and we desire to check the process as soon as possible.

The Vienna paste consists of: \mathcal{R} . Potass. caustic., calcis vivæ, āā , partes equales; spirit. vini rectific., q. s. ut f. pasta. \mathcal{M} . Application: After the healthy parts have been protected by strips of adhesive plaster, the paste is spread as a plaster upon linen, laid upon the part, covered with lint, and left for ten minutes, during which time an eschar is formed. A bath is then taken, and the cauterized portion is separated within fourteen days. This method, however, is suitable only to a sharply-defined lupus; for instance, when it is not larger than a silver dollar. Similar indications may call for the use of LANDOLFI's mixture, composed of a drachm of the chloride of bromine, two drachms of the chloride of antimony, and three drachms of the chloride of zinc, with sufficient powdered liquorice to make a paste. This is changed daily for three days.

The simple COSME's paste is also used in lupus hypertrophicus and serpiginosus: \mathcal{R} . Acidi arseniosi $\mathfrak{D}\text{j}$; cinnabaris $\mathfrak{Z}\text{j}$; ung. simpl. $\mathfrak{Z}\text{ij}$. \mathcal{M} . This latter is renewed for three consecutive days. On the first day the pain is slight, quite considerable on the second, and very severe on the third. The lupous growths at first become greatly swollen and purple-colored from the application, and a considerable œdema takes place into the neighboring parts. The masses generally separate within two weeks in an eschar. Care must be exercised in using this remedy, on account of the arsenic which it contains, and it should be applied only to small patches. For extended forms of lupus, the best remedy will be found to be the modified paste of LANDOLFI: \mathcal{R} . Acid. muriat. concentr., pulv. glycyrrhizæ, q. s. ut ft. pasta (HEBRA).

Chloride of zinc is also used as a caustic in lupus (VEIEL), mixed with powdered arrow-root or farina, in the proportion of equal parts, or one to two, or one to three parts of farina, rubbed with a little water into a paste; or, after the method of CANCOIN, *zinci chloridi, liq. antimonii terchloridi, aa, 3j; farinae, 3jss; aq. q. s. ut f. pasta.*

All these pastes act slowly, and cause great pain. They must remain on at least twenty-four hours.

Galvano-caustic.—The use of the hot iron in this disease has been known since the middle ages, but has never obtained universal application, because of the great difficulties which have existed, on the one hand, as to the form of the iron, and, on the other, in the impossibility of retaining it at a glowing heat. These impediments are overcome in the *galvano-caustic*, for we can give platina any form required, such as a point, or that of a blunt cylinder, or of a knife; and the galvanic apparatus, as is known, is of such a nature that we can thereby maintain the heat for hours at pleasure, and can also modify its intensity.

An important advantage gained by this method is, that the pain during the operation is less than with the use of nitrate of silver, and that it disappears shortly after the burning. While, with caustics, the pain is very severe, and lasts from four to eight hours, during the use of the actual cautery it is much less, and almost nothing afterward. Patients who have been treated with various caustics far prefer this method. But there are certain regions where the painful sensations are greater: these are the inner angle of the eye, the corner of the mouth, the whole sub-maxillary space, the neck, and the flexor surfaces of the joints. The degree of heat has some influence upon the amount of pain produced, a white heat causing the least. This, however, is seldom employed, because the heat radiating from it burns the neighboring tissues unnecessarily, and the glaring light often makes the lupous tubercles unrecognizable. A further important advantage is the rapidity with which the diseased tissue can be removed by this method. The most varied forms of lupus tuberculosus, hypertrophicus, serpiginosus, etc., have given us good evidence of the efficacy of this means in HEBRA'S clinic. Finally, we must mention, as an important advantage gained, the short duration of the treatment.

Galvano-caustic instruments: 1. A loop of platinum-wire running to a point, after the fashion of a tooth-cautery. 2. A common porcelain burner

wound with numerous spirals of wire. 3. A flat piece of platina, knife-shaped. The results of cases treated by this means were: *a*, a complete recovery in the majority of cases of lupus hypertrophicus, tuberculosus, and serpiginosus, treated thus only; *b*, one galvanic cauterization destroys about as much as twenty applications of nitrate of silver.

Carbolic Acid.—This caustic is especially suited to the milder cases of lupus maculosus and tuberculosus. I employ the acid after HARDY's method in connection with alcohol, in the proportions of one part to one, two, three, or four. The concentration depends principally upon the sensitiveness of the patient. The more concentrated the solution, the sooner do we expect success; the pain varies according to the strength of the solution and stage of the disease; its duration is also various. The scars are more comely than after any other caustic. Carbolic acid penetrates the tissues and cauterizes parts with which it has not come into immediate contact; in this respect, therefore, it resembles potash, but does not reach so deeply, and the cicatrices formed are smoother. According to my experience it is of service in lupus maculosus and tuberculosus which are not very widely extended.

To study the manner in which carbolic acid acts on organic tissue, I chose the ear of a white rabbit, into which I injected four drops of a solution of one part of carbolic acid in four of alcohol, by means of a hypodermic syringe. A small, dark-brown tumor of the size of a bean was formed, surrounded by an oedematous areola two to three lines broad. The next day this had attained the size of a small cent; the whole ear had swollen, become reddened and hot. After fifteen days, an eschar separated, of the same size, leaving an opening in the ear equally great. Microscopic examination showed the crust to be very transparent; in the reaction with acetic acid, the corium alone was filled with a cellular infiltration; the eschar gave the impression of a dry mummification.

The frequency of the applications of carbolic acid will depend on the concentration employed. Equal parts are used three times a week; one to three or four parts may be used daily.

b. LUPUS ERYTHEMATODES.

Syn. *Lupus Erythematosus*, *Erythematosus Lupus*.—L. D. B.

As opposed to *lupus vulgaris* (Willani), we have that known as *lupus erythematodes* (Cazenavi), which is accompanied with a cellular infiltration of the tissue of the corium, an

intense affection of the sebaceous glands with the formation of comedones, and with a very tedious but never very deep ulceration (*lupus qui détruit en surface*, BIETT). At the outset, pale-red spots or papules, of the size of a pin's-head, appear on the face (cheeks and nose), whose centre corresponds to the orifice of a hair-follicle, and which are covered with thin, firmly-adherent epithelial scales or greenish-colored crusts. By a gradual extension of this eruption, the skin is involved to the size of a cent, and afterward in larger portions. After long continuance, the centre sinks in, and the lupus progresses centrifugally; the efflorescences, which were first isolated, run together, and in this way the nose and cheeks eventually may be involved in a figure resembling a butterfly, whose body rests on the nose and the wings on the cheeks (HEBRA). New papules soon form on the circumference, which expand to spots of various sizes, and heal in the centre, while they extend peripherally, join with the neighboring efflorescences, and, as they generally fade at the points of contact, the lupus takes the form of serpentine lines (*gyri*). Ultimately, the whole face may be affected, and no regular form of extension can be any longer perceived. After several years the diseased portions are transformed into cicatrices, which are often depressed and darkly stained, and are shining and parchment-like.

On the hairy scalp, which may likewise be attacked, the diseased skin becomes bald in a circular patch; the orifices of the follicles, which were at first enlarged, and plugged up with sebum, in a later stage lose their follicular structure, and the skin becomes scarred; the cicatrices may ulcerate anew. The red portion of the lips and also the ears are affected in most cases at the same time, and have dry scales on them; the body and extremities (especially the upper) are affected in rare instances; very seldom is the palm of the hand attacked. Besides the considerable disfiguration of the face, and the baldness of the head occasioned, the disease also gives rise to severe itching; its course is chronic, and its resistance to remedies great. Recurrences are very frequent.

Females suffer oftener from this disease than males. Lupus erythematosus seldom occurs before the twentieth year of life; I have as yet observed but two cases, one in HEBRA's clinic,

and the other a few days since in my clinic ; both had lupus at the age of seven years.

The disease under consideration is distinguished from *lupus vulgaris* by the fact that in the latter tubercles, ulcers, etc., are formed, and never in the former ; on the scalp alone do we find superficial ulcerations occurring in the scars of lupus erythematodes ; the cartilages are never involved in the erythematous variety, nor is its extension ever so great as that of *lupus vulgaris*. *Lupus vulgaris*, further, may come in childhood (third year of life), while this form is seldom seen before the twentieth year. The destructions caused by the former are greater than those from lupus erythematodes. In most cases it is readily perceived by the naked eye that the sebaceous glands and hair-follicles are the primary seat of disease in lupus erythematodes, for the orifices, as before mentioned, are occluded with scales and comedones, while in lupus vulgaris the commencement is seen to be in small, dull-red spots.

Anatomy.—In the year 1863 I had an opportunity of carefully studying this disease, concerning which no microscopical examinations had previously been reported, and the results I then published (*Wiener medicin. Wochenschr.*). In the article alluded to, I gave prominence to the clinical fact that lupus erythematodes took its origin from the cutaneous glands (sebaceous glands and hair-follicles). The histological condition found corresponded to this. This was afterward confirmed by GEDDINGS (*Sitzungsber. der k. Akad.*, 1868).

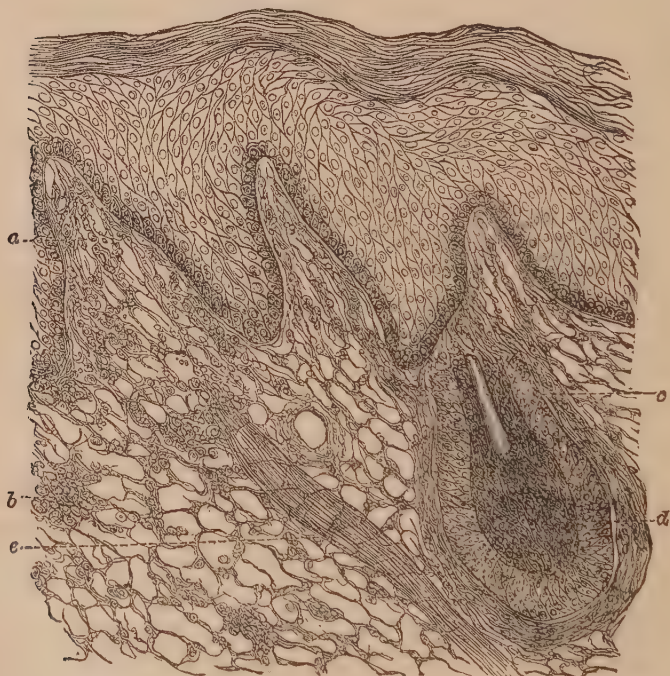
The walls of the sebaceous glands are found to be thickened, especially in the beginning, partly by an increase of connective tissue, and partly by cells which appear in great quantity externally and internally. The change is greater in eruptions of longer duration ; the glands lose their acinous structure, and, after the closure of their orifice, are transformed into globular bodies (*milium*), with friable contents ; they project more and more, and in most places are finally destroyed. Similar infiltrations are likewise found in and around the hair-sac ; in consequence of this the hairs fall out, and those remaining are split on their free extremity, the root-sheaths are separated from the bulb, and the pigment of the hair diminishes.

On the under surface of the scales, there are villous pro-

jections, which, as in seborrhœa, come from the orifices of the follicles.

The papillæ (Fig. 36) are altered in form and size; some are cylindrical, others conical and elongated; most of them are larger than normal, even ten to twelve times; their stroma is formed of dense connective tissue, with moderate cell-infiltration in places; the meshes of the connective tissue are not so thick in the corium, but here and there groups of cells may be clearly seen. These are found mostly disposed in tracts, which subdivide and appear so superficial that the line of demarcation between the rete Malpighii and corium is completely lost.

FIG. 36.



Lupus erythematosus.—*a*, Enlarged papillæ, with cell-infiltration; *b*, Great accumulation of cells; *c*, hair (cut off); *d*, Sebaceous gland, with infiltration; *e*, Arrector pili.

In other places these infiltrations extend deeply, and form large tracts, and sometimes the cutis is so filled with them that there is nothing more to be seen of the normal tissue. In this stage no histological differences can be made out between

lupus erythematodes and lupus vulgaris. In both diseases the cells undergo a retrograde metamorphosis, leaving a dirty-yellow granular pigment. The fatty tissue and nerves disappear completely when the disease lasts long.

I had subsequently an opportunity of examining with the microscope another case of lupus erythematodes, which appeared not only on the face, but also on the palmar surfaces of the hands, a rare occurrence. There being in general no sebaceous glands or hair-follicles on the palm of the hand, the conclusion was arrived at, that the disease does not always take its origin in these structures. There were numerous collections of shrunken cells, mostly in groups, especially between the rete Malpighii and the cutis; these were stained but little by the carminate of ammonia, and did not swell with acetic acid; these collections reached also into the deeper layers of the cutis.

Therapeutics.—Inasmuch as we are acquainted alone with the local changes and not with the causes of the disease, we can treat only of the means which act destructively upon the morbid products. To these belong the spiritus saponis alkalinus; this is rubbed on with flannel, or, better, a hair glove, and a salve applied afterward, consisting of \mathcal{R} . hydrarg. precip. alb. $\mathfrak{z}\text{j}$, ung. simpl. $\mathfrak{z}\text{j}$; and this may be made more effective by the addition of bismuth subnitrat. $\mathfrak{z}\text{j}$. Kali-crème, caustic potash, and corrosive sublimate, act in a similar manner; the two latter may be used in various concentrations.

Cauterizations, with equal parts of caustic potash and distilled water, may be made every third day. The concentrated acids, acetic, nitric, chromic, and carboic, are employed in obstinate cases, and the fuming nitric acid is especially useful in rapidly destroying the tissue; but, as the slough thus formed adheres for a long time, the applications can be but seldom made. Carboic acid answered well in one case; mercurial plaster is next in efficiency. Iodized glycerine is sometimes of service, as also frictions with Rochard's ointment: calomel, $\mathfrak{D}\text{j}$; iod. pur. gr. vij ; leni igni fus. adde ung. simpl. $\mathfrak{z}\text{ij}$.

WILSON recommends internally, cod-liver oil, arsenic, and iron; externally, sulphur-baths, acid nitrate of mercury, and an ointment of iodide of sulphur.

[Our author has not referred to a division quite common to English readers, namely, lupus *exedens* and *non-exedens*. The former is applied to the disease where the destruction extends deeply, involving even subjacent structures, and which, shortly after its origin, presents either an ulcerated discharging surface, or one covered with crusts and not disposed to heal; while lupus *non-exedens* may run its course without there being even once a solution of continuity, the new deposit taking the place of normal structures and being reabsorbed beneath a reddened, unhealthy-looking epidermis. The progress of this variety is very slow, and it is more superficial than the ulcerated variety, *lupus exedens* or *vorax*.

Erythematous lupus was probably meant by BATEMAN, when he alluded to a form of the disease on the cheeks resembling ring-worm (MASON GOOD). HEBRA describes it under the name *seborrhœa congestiva*, though he now ranks it with lupus, and employs the name *lupus erythematosus*.

WILSON and FOX both place lupus among strumous affections, that is, in a class of that name which includes lupus, and what they style *scrofuloderma*. The former says, "Struma, scrofula, or scrofulosis, presents itself in the skin in two forms, either as simple scrofuloderma or as lupus." *Scrofuloderma*, as I understand it from their descriptions, relates to the indolent, dull-red formations in or beneath the skin, which soften internally and break, giving exit to an unhealthy pus. They crust over, but show no disposition to heal, and keep discharging an ichorous fluid from the flabby ulcers beneath. They are also very chronic, but are distinguished from lupus by not invading new tissue, as does lupus, by there being present at the same time some of the other marks of scrofula, and by yielding, as a rule, to a treatment directed against this state, consisting of an improved hygiene and living, cod-liver oil, and iodide of iron. WILSON says: "The former" (scrofuloderma) "is a primary result of recently-produced and crude scrofulous tissue; the latter" (lupus), "a consequence of the identification of the scrofulous tissue with the structure of the organ."

The treatment of lupus must be decided; temporizing is fatal. If caustics are used, they must be applied *thoroughly* and *repeatedly*, the object being to destroy the lupoid tissue completely, otherwise they but stimulate the diseased part to increased cellular hyperplasy and subsequent disintegration. The forcible name given of old to this frightful disease, *noli me tangere*, "touch me not," it will be well to bear in mind, for, unless caustics do good, they certainly will do harm. Therefore, one should not cauterize a lupus unless he feels pretty sure about the confidence his patient places in him, and the physician should endeavor to secure this by a free and open statement of the disease, its dangers, its obstinacy, the pain attending the operation, etc., for the first application of the caustic will not always assist in establishing such an assurance, and the sufferer will be ready to run off to some one who promises more and can do less with milder means. Constitutional treatment should never be neglected; a thorough regulation of the system, a tonic course with oil, bark, iron, and mineral acids, with very liberal allowance of animal food, milk, and cream, together with ex-

crease in the open air, will often prove the fact that lupus is a disease of debility; arsenic comes only after all other means, and adjuvant to them, although HUNT (as usual) vaunts this remedy, and says he has "treated upward of a hundred cases of lupus exedens, chiefly by arsenic, which has almost invariably succeeded when the patient has been healthy and under fifty years of age."

We must never forget the possible existence of a syphilitic complication, which should be carefully looked into and removed by all means, when a lupoid growth, which has long resisted treatment, will be found to yield. Iodide of iron, in the form of the syrup, is a most valuable remedy in this disease, either alone or with cod-liver oil. Several writers allude favorably to the iodide of ammonium, chiefly on the strength of WILSON's experience. He gives two to three grains twice or three times a day, and applies it also locally, of the strength of a drachm to the ounce of glycerine. A. T. THOMSON was very successful in the treatment of lupus with the remedies above given, seldom employing local applications; he used the *biniodide of arsenic*, in doses from one-twelfth to one-sixth, or even one-quarter of a grain. NELIGAN regards the employment of topical agents as altogether secondary.

As to the local treatment, authorities are, to some extent, divided: some, with HEBRA, boldly using the most powerful caustics very freely; others drawing back from such an apparently cruel practice, and preferring to trust to emollient applications with occasional stimulation or cauterization of the mildest kind. These remarks must refer mostly to the treatment of our author's *lupus vulgaris*, including the *exedens* and *non-exedens* varieties; for lupus erythematodes will often succeed better under a mildly-stimulating treatment alone, pure tar being one of the best applications, and seldom requires the more active measures.

CAZENAVE clearly distinguishes two lines of local treatment, which it is well to remember: 1. Resolvent applications, more or less irritating, for the purpose of modifying the vitality of the skin, to be used before ulceration takes place; and, 2. Caustics, employed with a view of destroying the diseased surfaces, and arresting the progress of the malady, and making healthy cicatrices; BAZIN emphasizes the same. This is an important point; for the cuticle is, by all means, the best covering for wounds, Nature's provision, and, if we can cause absorption without producing a solution of continuity, our object will be best attained. The only exception to this rule is, where the process is rapidly extending, and threatens some important part, then we must interfere, thrust in a stick of nitrate of silver or potash, and destroy the new tissue, as described in the text. Other remedies of the resolvent order, besides those given, are the red iodide of mercury used weak (highly recommended by many), iodide of sulphur, iodide of lead, and tincture of iodine.

No one, who has seen HEBRA wield the solid nitrate-of-silver stick for a while, can agree with CAZENAVE, when he says that this form of caustic is of no avail in lupus, however much he may object to the barbarity of the

treatment; and, the only reason why it fails in the hands of others is, from a lack of thoroughness in its application. An anæsthetic should be given when the disease is extensive, and when the fear of pain is likely to deter either physician or patient from a proper use of the remedy. TILBURY Fox and others lay stress on the necessity of an emollient treatment before and after caustic applications, as a poultice, a soothing ointment, or paste of oxide of zinc, or calamine and glycerine, with perhaps a little lead-lotion. HARDY uses a strong preparation of the red iodide of mercury to cauterize with (equal parts with lard); CAZENAVE has used the same in powder, *undiluted*, sprinkled over a portion of the diseased surface at a time: much pain and inflammation follow, which subside, and the crusts fall off in six, eight, or ten days; it is said to be attended with most beneficial results, and should be repeated as often as required. DURKEE has had recourse to this salt of mercury in three cases, and states that cicatrization took place in a few weeks in a satisfactory manner. He employed the formula:

℞. Hydrarg. biniodi, ʒj.
Glycerine, ʒj. M.

The iodide of starch paste is recommended by HILLIER as used by MARSHALL, and as being very serviceable, and almost unaccompanied with pain; Fox also mentions it. WEISSE (*Amer. Journ. Syph. and Derm.*, October, 1870) has employed acetate of zinc in lupus serpiginosus, as NELIGAN advises, and reports most favorably as to its value. After the ulcerations are carefully freed from crusts, the remedy is applied thoroughly *in crystal*, and the part kept constantly wet with a solution of the salt (gr. viij ad ʒj), by means of lint covered with oiled-silk. An ointment may be substituted (gr. x ad ʒj) if the patient must move about.

Whatever method we try, the best results in this, as in many other affections, will be attained by faithful perseverance in any one plan of treatment, rather than by the trial of first one, then another remedy. The progress will always be slow, and much patience will be required by the physician as well as patient to insure success.—L. D. B.]

2. SYPHILODERMATA.

Syn. *Syphilis of the Skin*, NEUMANN; *Syphilida*, *Dermatosyphilis*, *Cutaneous Syphilis*, *Syphilides*.—L. D. B.

Since a clear knowledge of the non-specific eruptions is impossible without an acquaintance with the specific, a complete separation of the two being inappropriate, the addition of this chapter will be justified.

As is known, the chancre and the syphilitic contagion were formerly held to be identical; sores were always spoken of as the primary symptoms of lues, without making any clear dis-

tinctions between venereal and non-venereal affections. HUNTER (1767) even believed in the identity of the contagion of the chancre and gonorrhœa, as assumed by FERNEL, FALLOPIA, ASTRUC, and others (although CHARLES BELL's researches led to quite different conclusions), and was the first to prove the connection between the indurated chancre and constitutional syphilis, and first made experiments with reinoculating the secretion on the bearer, and concluded that neither the secretion of the hard chancre, nor that from secondary eruptions, was auto-inoculable; he described the indurated chancre as the primary affection of syphilis, which he looked upon as its single and only cause.

RICORD proved with certainty that the gonorrhœal poison has only a local action, and is essentially distinguished from the chancreous; that the virus of the chancre penetrates the nearest lymphatic glands, and either causes suppuration (primary syphilis), the process then being ended, and the infectious power of the poison (virulence) extinguished, or, the contagion may penetrate farther into the organism and produce various alterations in the skin, mucous membranes, and bones (secondary and tertiary syphilis), after the base of the primary sore has previously become indurated. At first he maintained that secondary syphilis was not contagious. But in Germany, especially by the instructive experiments of WALLER (1850), it was proved that syphilis may be transferred to the healthy person by means of the blood, mucus, and other secretions, without a chancre necessarily occurring on the place of infection, and that, therefore, all secretions and tissues may be the bearers of secondary syphilis.

CLERC and BASSEREAU (1852) compared the acquired chancre with ulcers of the uterus, and made two varieties of chancre; the hard, with a poison entering the blood, and the soft, having solely a local action, and always remaining such. On this ground they first promulgated the idea of the *duality of the contagion*. RICORD also afterward followed this dualistic theory, in the same manner as he had given up his doubts as to the contagiousness of secondary syphilis.

CLERC subsequently assumed that the so-called soft chancre was only the result of the infection of a person already infected by a hard chancre.

This soft chancre thus arising, which he called *chancreoid*, may be countlessly reinoculated without again showing its original character of induration. This opinion was, however, soon opposed by RICORD.

By further experience, together with experiments, the view was soon arrived at that there are two varieties of chancre: the one, running an acute course, remaining, as a rule, local, and which is followed by syphilis only exceptionally (soft chancre); the other, with a chronic course, differing from the former by its hard base, and which must be followed by constitutional symptoms (indurated chancre). This dualistic theory had eminent adherents, especially in Germany, through the influence of BÄRENSPRUNG, ZEISSL, and others.

Subsequent observations further demonstrated the fact that the soft chancre could be reinoculated any number of times upon the same person, while an indurated chancre inoculated a second time on its bearer does not take. It was further seen that the more sores there were on the primarily-affected part, the less probability there was of general infection. Soft chancres could be produced in great numbers on syphilitic persons, but not the indurated.*

A further difference was discovered, namely, that the secretion of the soft chancre is inoculable upon animals (AUZIAS), while that of the hard is not. Experiments made by WALLER, WALLACE, ROBERT, HEBRA, LINDWURM, PELLIZANI, ZEISSL, and others,† with the inoculation of the syphilitic virus, however, showed that an induration was produced, after several weeks, in every instance.

ROLLET, a physician in Lyons, presents a new species, the *mixed chancre*. Experience proved that ulcers in the first few days might have entirely the characters of the non-indurated sore, and not give a single indication of being any thing else than a chancreoid, and yet in a few days acquire a completely hard base; the dualistic theory would thus have been quickly overthrown had not ROLLET supported its existence by his apparently good theory.

* In 1863, BROECK, of Christiania, disputed this assertion, and briefly communicated to the author that the cause of failure in the syphilization of our school was not to be ascribed to the method, but to the fact that we used the secretion from the soft and not that from the hard chancre.

† See AUSPITZ (*die Lehren vom syphil. Contagium*, Wien. Braumüller, 1866).

The patient was inoculated by ROLLET at the same time with the two poisons: the one had a short incubative stage, and appeared as a pustule or ulcer of the skin on the third day; the other had a longer period of incubation, and the hard base made its appearance not before the end of a week or even later. On this hypothesis the dualistic theory would have considerable support; vaccination might be regarded as an analogous event. Thus, if we vaccinate from a syphilitic person upon a healthy, without the admixture of blood, pus, etc., a normal vaccine pustule is developed; but, if the lymph is mixed with these elements, an induration may be clearly perceived after the drying of the pustule.

These apparently weighty arguments, which might go far to the support of the duality of the virus, have, however, been overthrown in later times by careful researches. In 1853, VIDAL was decided in favor of the unity of the chancre, and LANGLEBERT and others soon sided with him (1858). In Germany, HEBRA, SIGMUND, and MICHAELIS, professed the unalistic theory, while others were unsettled in their views, for a short time, by the spirited hypothesis of ROLLET. The repeated experiments which BEIDENKAP, KÖBNER, and others made, were the first to prove that the secretion from hard chancres, condylomata, etc., inoculated on the bearer, was repeatedly effectual.

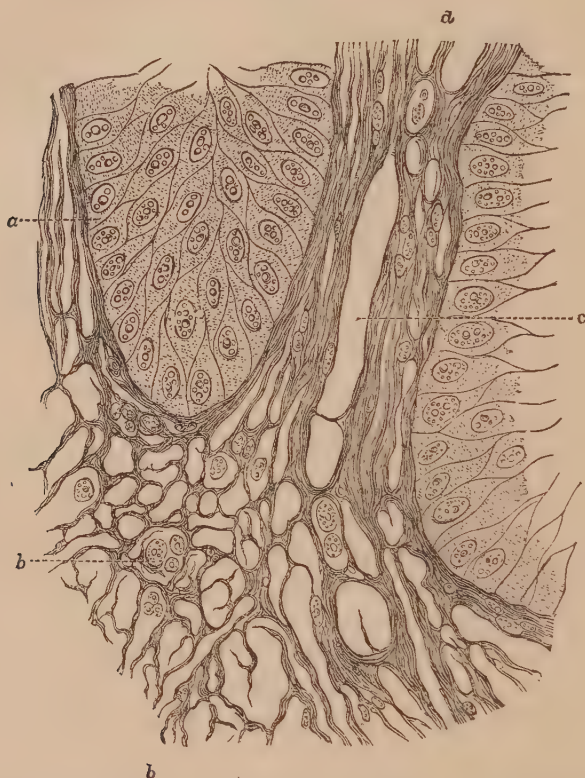
In order to avoid the opprobrium which the repetition of the above experiments with such pus would give rise to, resulting from repeated opening of chancre cicatrices, REDER inoculated the scar of a recently-healed chancre with a seton, but without success. To the objection that ordinary pus also produces pustules, REDER and KRAUS showed by experiments that only the pus from fresh pustules takes, while pus that produces no pustules on the healthy skin causes them to appear on syphilitic persons.

The most important supports of the dualistic theory appear, therefore, to have failed, and the chancre can, in general, be no longer considered a disease independent of syphilis. *The secretion of the soft chancre, according to this view, represents a concentrated poison, which induces a more acute process and prevents general infection, by destruction of the virus; while the secretion of the hard chancre acts more slowly and produces chronic poisoning of the blood.*

It remains, nevertheless, true that the soft chancre is, as a rule, only a local affection; that the inoculation of its secretion

upon healthy persons produces only a soft chancre; and that, likewise, syphilis appears but very seldom after a non-indurated sore.

FIG. 37.



From the vicinity of a soft chancre.—*a*, Swollen epithelium of the mucous layer; *b*, Corium; *c*, Enlarged capillary of the papilla, with thinned walls; *d*, Papilla. The connective-tissue fibres are separated from one another by round cells and serum.

The *anatomical differences* between hard and soft chancres are also not striking. Cell-infiltration and alteration in the walls of the capillaries are found in both, and in the soft chancre we have the appearances ordinarily seen in inflammation, i. e., the blood-vessels distended, the connective-tissue cells and those of the rete Malpighii swollen (LINDWURM). (See Fig. 37, after BIESIADECKI.)

The indurated chancre forms infiltrations similar to the so-called secondary papules; in what way the hardness comes to

pass must for the present remain undecided; whether it is from the immediate effect of a firm exudation (BÄRENSPRUNG), or from the development of thick capsules (MICHAELIS), or from an effusion into the lymphatics (RICORD), or from thickened vessels and stiffened connective tissue. All that can be positively proved in ulcerating hard chancres is cellular infiltration of the cutis, cell-proliferation, fatty degeneration, and destruction of the rete Malpighii. In ordinary induration, without ulceration, the same changes in the main are seen, only we find, in addition, a cicatricial atrophy of the cutis, upon which there is a thin layer of epidermis (AUSPITZ).

VERSON (VIRCHOW's *Arch.*, 45. Bd.) found connective-tissue and exudation cells filled with roundish cellulæ in the induration; the exudation-cells were somewhat spindle-shaped. Thick, fibrinous bands, with exudation-corpuseles, were also found; the walls of the vessels were separated by cells, which originated from the infiltration of the vessels.

Soft or Primary Ulcer.—The soft or venereal ulcer is characterized by a sharply-cut, swollen, red or yellowish border, and by a pultaceous base, which secretes a profuse, yellowish or green colored matter. When we transfer this secretion by means of an inoculating-needle to a healthy skin, a pustule is developed by the third day, which extends, and, when it ruptures, discloses a similar base and edge. These ulcers, which are most common on the genitals, and arise from contact, are sometimes multiple, and are generally accompanied with swelling of the neighboring lymphatic glands; the contents of these glands, which frequently suppurate, are inoculable, like the secretion of the original ulcer. While we were making use of the syphilization method for the cure of syphilis as recommended by BOECK, we were able to produce many hundred ulcers similar to these by inoculation, and they failed to "take" only when a portion of the skin had already too many pustules and ulcers (local immunity), or when the whole organism appeared saturated with the chancroidal pus (temporary immunity); this latter remained generally but a few days, and while we were unable within a short interval to produce any effect even with the freshest matter, the inoculation was, after a few days, again attended with success.

The pus from a chancre differs neither chemically nor mi-

croscopically from that of other ulcers. The forms assumed by chancrous ulcers are as follows :

The *simple ulcer*, with the above-described characteristics.

The *phagedenic and gangrenous ulcer*, which destroys the tissues very rapidly, and is generally seen in very reduced persons, those who are scorbutic or scrofulous, or weakened by a misuse of mercury; it is attended with severe pains, and the gangrenous portions separate from the healthy portions by a sharp line of demarcation.

The *serpiginous ulcer*, which heals in the centre, while extending peripherally in the form of semicircular ulcers, thus often becoming kidney-shaped.

The *burrowing ulcer*, extending generally into the subcutaneous cellular tissue in cavities or fistulous tracts.

The *diphtheritic ulcer*, commonly attended with severe inflammation, and with a firmly-adherent yellowish-white covering on its base.

Local Treatment of Chancres.—Ulcers which do not extend deeply heal spontaneously, and therefore the mere application of lint suffices. In the majority of cases, however, we must make use of some caustic: nitrate of silver, caustic potash, corrosive sublimate, carbolic acid, or Vienna paste. The former may be used either in a concentrated form, or in a solution, one to four grains to the ounce. Sulphuric acid, rubbed to a paste with charcoal, is suited to some cases. Red precipitate (gr. j ad 3j), white precipitate (gr. x ad 3j). Basilicon ointment, protiodide of mercury, and the lotio flava (hydrarg. subl. corros. gr. ij; aq. calcis 3j), are rather suited to a later stage. A paste consisting of acid. carbol. 3j, ol. lini, 3ij, cret. alb. q. s. ut ft. pasta. mollis (LISTER), spread on linen and renewed every day, is especially applicable to larger ulcers. The mercurial plaster is also serviceable. The manner of treatment must be varied according to the location of the ulcer, its character, and the constitution and occupation of the patient.

Secondary Syphilis.—The so-called secondary forms are the following: 1. Syphilis cutanea maculosa; 2. Papulosa, tuberculosa, nodosa; 3. Squamosa; 4. Vegetans; 5. Ulcerosa; 6. Pustulosa; 7. Bullosa (pemphigus syphiliticus); 8. Rupia

syphilitica; 9. Alopecia syphilitica; 10. Onychia syphilitica.

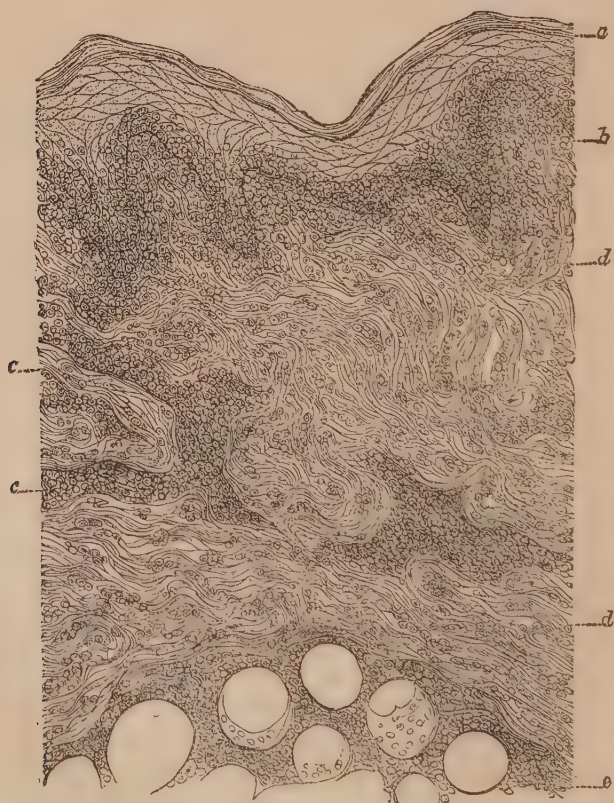
Before proceeding to the symptomatology of the above-mentioned forms of syphilis, we may present a few of their general peculiarities. The syphilides are marked first of all by the slowness of their course—in this they are distinguished markedly from many other chronic cutaneous affections; by their tendency to relapses, a syphilitic patient never being safe from subsequent attacks during his whole life; by their infectious character, even after long continuance; and, by their transmissibility to descendants. Their color, in a great number of cases, is of a coppery hue, or a dirty-brownish red, especially after long existence; this is dependent on a peculiarity of the pigment in the rete Malpighii and corium, and varies in different stages of the eruption; thus, the maculæ syphiliticæ are at first bright red, and subsequently brown, while the ulcerous forms are copper-colored; further, they are characterized by the absence of itching, even when the number of the efflorescences is considerable.

The syphilides may make their appearance over the whole surface of the skin, but have certain places of election, and a peculiar manner of grouping; thus the macular syphilide comes principally on the body, the squamous on the forehead; syphilitic psoriasis affects the vola manus and planta pedis, the ulcerated form comes on the scalp, and syphilitic pemphigus attacks the palm of the hand and sole of the foot. Further, they are disposed in a particular manner, i. e., the semicircular, or orbicular. The various forms frequently combine; especially does the roseola occur at the same time with the papular syphilide. WERTHEIM has answered the question why syphilis follows in a regular order of arrangement, by carefully investigating the location of the eruption in thirty cases; he found that the eruption follows the lines in the skin completely, as they have been carefully marked out by LANGER.

1. *Syphilis cutanea maculosa* (*Erythematous Syphilis*, *Roseola syphilitica*, *Flecken-Syphilis*).—Livid, pale-red, or brown spots of the size of the nail, which are the result of a local hyperæmia, together with cell-infiltration along the capillaries, make their appearance with slight febrile movement, mostly on the

body, more rarely on the face, sometimes also on the palm of the hand, tongue, and soft palate. These vary in form and size, and may be circular (*roseola annularis*). Roseola syphilitica is the earliest form of eruption after the infection. This need not be mistaken for measles or erythema, if we remember the catarrhal febrile phenomena that accompany the former, and the fact that erythema runs a rapid course. The spots of roseola syphilitica appear more clearly under the action of cold, which criterion may be of service in doubtful cases. This syphilide, which often passes quickly into the papular form, disappears in exceptional cases very rapidly; as a rule, it remains weeks or months, and generally leaves slightly-pigmented patches.

FIG. 88.



Syphilitic papule from the thigh.—*a*, Epidermis; *b*, Rete Malpighii; *c*, Cell-infiltration in the corium and panniculus adiposus; *d*, New formation of connective tissue.

2. *Syphilis cutanea papulosa* (Fig. 38).—Syphilis appears thus: either in the form of papules from the size of a pin's-head to that of a pea, or as tubercles still larger, which may be scattered everywhere, or may form groups (except on the back of the hands and feet), and are covered with scales as they grow older; sometimes they suppurate at their apex, and are then accompanied with swelling of the glands. The anatomical alteration in the tubercular syphilide resembles in general that found in the indurated chancre, namely, the rete Malpighii, papillæ, and corium, are filled with indifferent cells, which also come in great numbers between the fat-globules of the panniculus adiposus. The connective tissue is swollen, its interstices enlarged, and filled with the above-mentioned cells.

3. *Syphilis cutanea squamosa* occurs either on single parts or over the whole surface, and is either developed from macular and papular eruptions, or appears primarily with febrile phenomena, by the development of fat red blotches, which in a few days are covered with scales, mostly collected on the periphery. In some places crusts are formed instead of scales, which produce crescentic or circular layers, especially on the hairy scalp; with this form the patients are cachectic, the glands swell, and the hair falls out. Semicircular patches may also form on the scrotum and penis, the skin becoming red and inflamed by their long continuance; they may readily be mistaken for eczema; but this form does not appear until the earlier manifestations of syphilis have long past. We can avoid confounding this variety with *psoriasis vulgaris* by remembering that the quantity of scales is great in the latter, that they are shining, mother-of-pearl-like, easily removed, leaving a bleeding corium, while the scales in syphilis are, as a rule, scanty; besides, the other characteristics are lacking (*see under Psoriasis Vulgaris*, page 216).

Psoriasis palmaris and plantaris.—Syphilis assumes a peculiar form on the palms of the hands and soles of the feet. There are formed brown or copper-colored spots, mostly of the size of a lentil, or larger, at first isolated, which sometimes disappear simultaneously with the maculo-papillar syphilide present on the rest of the body, leaving no mark behind; or, a small scale appears in the centre of the spot, which, on falling,

displays a loss of substance, surrounded by a whitish border of epidermis. The cavity then fills anew with epidermal matter, which is again cast off, and the edge is thus raised higher. Several such efflorescences become confluent, and a callous thickening of the skin takes place, which, in those who work hard with the hands, gives rise to deep and painful rhagadæ, or even to ulcers, so that the movement of the hands becomes painful or impossible.

4. *Syphilis cutanea vegetans* (*condylomata lata*, *Breite condylome*, *Plaques muqueuses*, *Mucous Patches*, *Mucous Tubercles*).—These are found both on the skin and mucous membrane, and are frequently the sole manifestation of syphilis. Papules or tubercles first appear, which extend in breadth, remain single or become confluent, and, after losing their epidermal covering, secrete a serous or purulent fluid, which is highly contagious, both on other persons and also on other parts of the affected person. The parts in contact with condylomata are therefore generally likewise affected, and the simple separation with lint suffices to protect them. They are seen most frequently around the anus, on the scrotum, perinæum, and prepuce, on the inner surfaces of the thighs, on the labia majora and minora, the navel, the female breasts, in the axillæ, at the corners of the mouth and nose, and, in general, in those places where there are large sebaceous glands and hair-follicles, and deep folds of the skin. Where the secretion of sweat is small, or where the parts are not in contact, the condylomata are covered on their surface with a thin crust (dried pus).

The microscopic examination of broad condylomata gives, in every case, enlargement of the papillæ, dilatation of their vessels and extensive cell-proliferation. As mucous patches are only tubercles ulcerating on their surface, we find the same changes in them as in the former, namely, the papillæ and subcutaneous cellular tissue crowded with cells; according to BIESIADECKI, the epidermis-cells are clouded, the prolongations of the mucous layer between the papillæ are diminished in size, and the epithelial cells are destroyed, so that the papillæ are laid bare. The walls of the vessels leading to the condyloma are affected to a great extent, and the cell-accumulation is found especially along the vessels.

5. *Syphilis cutanea ulcerosa* (*Syphilitic Gummy Tumors*).

—By this name are indicated tubercles of various size in the skin, which, in the beginning, present a greater consistence than in a later stage, when they become soft and gelatinous, and contain a gummy or even purulent fluid. The greater part of them are developed deeply, especially in the subcutaneous cellular tissue, but may also form firm nodules in the internal organs (especially in the tongue, liver, brain, lungs, and bones).

Syphiloma.—BÄRENSPRUNG, ROBIN, and WAGNER, believe that they have discovered the specific elements which had been previously conjectured to exist in syphilis, and these the latter observer designates by the name syphiloma. The new formation consists of cells $\frac{1}{800}$ to $\frac{1}{150}$ of a line in diameter. The cell-contents are granular. The cells and nuclei occupy the interstices, the elements atrophy, ulcers are formed. They are distinguished from other tumors by these cells, and also by their arrangement; they appear in the skin, mucous membranes, bones, liver, spleen, brain, lungs, etc. WAGNER's view has never been confirmed by any other anatomist, and no one has as yet found any point of support for recognizing any thing specific in the elements of syphilitic tumors.

6. *Syphilis cutanea pustulosa* (*Acne*-, *Varicella*-, *Impetigo*-, *Ecthyma syphilitica*).—Pustules result in several ways; either from rapidly-suppurating vesicles, or by the tops of papular eruptions suppurating, or, papules may be originally formed with febrile movement, as in small-pox, and these rapidly develop into vesicles and pustules, whose contents dry to crusts, and leave a more or less deep ulcer after their removal. These syphilides are generally attended with glandular indurations, axillary, cervical, or inguinal; the patients have a cachectic look, and are frequently troubled with affections of the serous membranes and rheumatic pains. The pustules have at first much resemblance to acne disseminata and varicella, but are readily distinguished from the latter by the fever which accompanies the varioloid process in the beginning, and from acne by the absence of comedones; it is hardly possible to confound them in a later period.

7. *Syphilis cutanea bullosa* (*Pemphigus syphiliticus*).—The number of cases of this affection in adults is small; we have seen but a single case, which was demonstrated by Prof. ZEISSL, in which the bullæ were located on the fingers; but *pemphigus neonatorum* is of very frequent occurrence. The children are

either born with a pustular eruption, chiefly on the palm and soles, the elements of which rupture a few days after birth, and leave a superficial ulcer, or small spots the size of a lentil come out on the parts mentioned, of a dark, purplish color, which soon develop into bullæ. These children die a few days after birth, from exhaustion, in spite of the most assiduous care; they live, at the longest, two to three weeks.

8. *Rupia syphilitica*.—This is a rare form of eruption. As stated under Impetigo, we recognize a rupia syphilitica, the crusts of which differ from those of impetigo in being conically formed, and having a hard, dry condition, and, after their removal, presenting an ulcer with the characteristics of syphilis. The scabs result from the drying of the purulent secretion, and, as the quantity of pus is commonly considerable, and the healing of the syphilitic ulcer requires a long time, they are usually quite thick; but, the most important diagnostic mark is, that beneath the impetiginous crust there is only an excoriation.

9. *Alopecia syphilitica*.—Passing by ulceration of the hairy skin and the formation of tumors, both of which may cause a loss of hair, the hairs also fall out from affection of the sebaceous glands, the scalp being covered with dirty-yellow masses of sebum; there may also be great scaliness. The hairs become harsh and brittle, their bulb atrophies, and they come out with combing. The loss of hair sometimes takes place over the whole surface of the body. When this occurs the patients are generally cachectic; the hairs, however, grow again after several months, when the syphilitic poison is overcome.

10. *Onychia syphilitica*.—The skin around the nail becomes diseased, is reddened, swollen, and painful, which symptoms disappear again partly from absorption, and partly from suppuration of the skin with shedding of the nail. The paronychia appears and affects the root of the nail as well as its sides, both of the fingers and toes; this affection follows the same course as that on the palma manus and planta pedis, that is, the nail is at first spotted and subsequently becomes uneven, knotted, and dirty-yellow colored. Both the old nail and that newly formed crumble into friable masses; painful and very rebellious rhagades are formed at the edge of the nail.

Syphilides in Children.—There are certain marks which distinguish the syphilis of children from that of adults. The fawn-colored hue and the peculiar waxy appearance of the skin of the face, the scanty eyelashes, the loud snuffling of the nose, will invite to a closer examination. Maculæ on children take the form of pale-red or dirty-brown spots, pustules display less infiltration around them, and the coppery color given as characteristic of the syphilides of adults is rare in children. The reasons for this are clear, when we consider the fact that children with congenital syphilis are generally very anæmic, and the skin is correspondingly more wrinkled; its vascularity is also strikingly less than in otherwise healthy persons who acquire syphilis. The localization of syphilis in the bones of children is one of the greatest rarities; but opposed to this fact is the one that, when congenital syphilis makes its appearance at a later age (twelve to fifteen years), it affects principally the bones in the form of periostitis, caries, and necrosis.

Therapeutics.—A not inconsiderable number of syphilitic patients do not come under observation until the greater part of their symptoms have vanished, and nothing but pigmentation, scars, and the like, are visible as *residua*. Such persons frequently have no suspicion of their disease, and consequently have made use of no treatment; the syphilis has, therefore, run its course spontaneously. We have also quite often, like other experimenters, treated syphilitic patients with quite indifferent remedies, as *extractum graminis*; and the morbid phenomena have disappeared, it is true, not until after some time. Syphilis, therefore, has a spontaneous course, and the remedies used may shorten its course, but never prevent relapses, for the latter belong to the rule, while the radical cure of syphilis does not often happen.

The *simple treatment* introduced by FERGUSSON consists in the administration of inert remedies or laxatives, as *lignum guaiacum*, *sal-amarus*, *gramen*, etc. This method is purely expectative.

Friction-Cure.—This course is indicated in the dry forms of syphilis, as also in those cases where the internal use of mercury is contraindicated. The metallic quicksilver, which, rubbed with fat, forms mercurial ointment, may be recognized as

microscopic globules in the skin, subcutaneous tissue, kidneys, liver, etc., after the friction-cure. OVERBECK proved this in experiments on dogs. The quantity used is from 3ss to 3j for each friction. *R.* Ung. hydrarg. (U. S. P.), 3jss; adipis 3jss. *M.* Div. in doses No. vj. Use one daily. A smaller quantity must be used by those with tender skins; for children, about gr. x.

The patient takes a warm bath to begin the process; the best plan then is to make the frictions in bed at night, the patient remaining several hours in a perspiration after it. On the first day we have both legs rubbed, on the second the thighs, the abdomen on the third, loins and sides of chest on the fourth, upper arms on fifth, and forearms on the sixth days. The frictions are continued until the syphilide has vanished or salivation ensues. The latter happens in many persons after the first few applications, others may make fifty or sixty without such a result.

Internal Administration of Mercury.—1. Corrosive sublimate. *R.* Hydrarg. chloridi. corrosiv. gr. j; solve in paux. aquæ dest. et adde extr. et pulv. rad. glycyrrhizæ, āā, q. s. ut ft. pill. No. xxiv. Take two, four, or eight, daily. *R.* Hydrarg. bichlor. gr. j; aquæ, ℥j. *M.* Take two to four tablespoonfuls daily. LEWIN uses corrosive sublimate (gr. j, aq. ℥iv) with success, in subcutaneous injections; it seldom produces abscesses. As early as 1860, I made these injections under HEBRA's directions, while interne in his cutaneous wards, but, as they gave no better results than other antisyphilitic remedies, their further use was discontinued. SIGMUND, KÖBNER, and GRÜNFELD, have likewise tried this method.

2. Iodide of mercury. *R.* Hydrarg. protoiodi, gr. iv; opii puri, gr. ij; pulv. glycyrr., ext. glycyrr., āā, ʒj, *M.*; div. in pill. xxiv. Take one to twelve daily.

3. Calomel. *R.* Hydrarg. chlor. mit. gr. iv; opii pur. gr. j; sacch. alb. 3j, *M.*; div. in pulv. xij. Take one three times a day; ten to twenty grains of this a day (WEINHOLD's method) readily produces salivation, as does also the protoiodide.

4. HAHNEMANN's preparation. *R.* Hydrarg. oxid. nigr. 3ij; conserv. rosar., pulv. glycyrr., āā, 3j, *M.*; div. in pil. āā, gr. v. Take one or two daily.

Iodides of potash and soda are used in solution or pill-form,

gr. x ad xx, *pro die*, especially in the so-called tertiary forms. The permanganate of potash may be used in the same doses as the iodide.

ZITTMANN's decoction, which is serviceable especially in the ulcerative forms of syphilis, is used by the pound, as the strong and weak decoction.* VOIGT, SCHNEIDER, and VAN DER BROECK, proved that the ordinary ZITTMANN's decoction contains corrosive sublimate. It was formerly thought that it could not be used in long-standing syphilis and poorly-nourished, cachectic persons; according to our experience in the hospital and private practice, we do not participate in this fear; thus, in one instance in HEBRA's wards, when all other antisyphilitics had failed, and the decoction was used only for the sake of trying something new, we have seen syphilis cured and an increase in weight of fifteen pounds, after the administration of one hundred pounds of the decoction. The first week of its use, even in ulcerous syphilis, where the improvement is otherwise the quickest, shows no effect, while the progress in the second, third, and fourth weeks is striking.

POLLIN's decoction (consisting of a decoction of sarsaparilla, China-root, pumice-stone, crude antimony, āā, ʒjss; green rinds of walnut, ʒx; water, ℥iij, M.; coque ad rem. ℥bj) is far inferior to that of ZITTMANN in efficiency.

Of other vegetable remedies, whose effect depends only on diuresis and diaphoresis, we may mention: Rad. lappæ, saponaria officin., viola tricolor, cort. mezerei, lobelia, extr. conii maculat., etc.

℞. Infus. rad. sarzæ. ex unc. una ad col. libr. macera per horas xxiv, dein coque ad reman. unc. octo, adde aq. laxat. Vienn., syr. sarzæ., āā, ʒj. S. Take in the morning; or, Decoct. Bardanæ (HEBRA's formula). ℞. Decoct. lappæ, ex unc. una uncias octo; infus. fol. senn. ex drachmis duabus uncias duas; sal. amar. drachmas duas.

Local Treatment.—Of all local applications, the mercurial plaster is most to be preferred; hard ulcers and tubercles disappear under its use far more rapidly than under general treatment. It is especially to be recommended in the corona syphilitica,

[* The reader is referred to the United States Dispensatory for an account of its ingredients and preparation.—L. D. B.]

to remove the eruption more rapidly from the face; it is also of service in syphilis of the hinder parts of children. I may here remark that eruptions in this locality may readily communicate the disease to the arm and system of those who carry them.

Broad condylomata frequently disappear merely by separating the contiguous parts by means of lint; they are, however, more quickly cured by means of caustics. PLENCK's solution (modified): \mathcal{R} . Hydrarg. subl. corrosiv., camphoræ, plumbi carbonatis, aluminis, spiritus vini rectific., aceti vini, āā , $\mathfrak{z}\text{j}$, M.; \mathcal{R} . LABARRAQUE's solution, i. e., liq. sod. chlor., calomel, āā , $\mathfrak{z}\text{j}$, M.; \mathcal{R} . Hydrarg. subl. corros. gr. iv; spirit vini rectific. $\mathfrak{z}\text{j}$, M.; \mathcal{R} . Hydrarg. corros. subl. $\mathfrak{z}\text{j}$; collodii puri, $\mathfrak{z}\text{j}$; æther sulph. $\mathfrak{z}\text{ij}$, M.; sig. sublimate collodium.

[It would be manifestly improper to discuss here the matter of the duality of the chancreous virus, however much our opinions may differ from our author; we believe, however, that the dualistic theory is that generally adopted in this country, and BERKELEY HILL states that those who hold this view form a constantly-increasing majority. We must refer our readers to the larger works on the subject, as also to an excellent historical as well as clinical review of the subject by Dr. JEPSON in the *New York Medical Journal*, vol. xiv., No. 3, 1871, and another by Dr. ZINSSER (*Am. Jour. Syph. and Dermatol.*, vol. i., No. 3, 1870).

I would add the testimony of my father, Dr. H. D. BULKLEY, as also my own, in favor of a mixed treatment, that is, giving both mercury and iodine of potassium at the same time, in most cases of secondary and tertiary eruptions, the form employed being commonly the protoiodide, thus:

| | | |
|--------------------------|---|---------------------------|
| | \mathcal{R} . Hydrarg. iodidi virid., gr. x. | |
| | Ext. conii, | $\mathfrak{D}\text{j}$. |
| M. Div. in pill. No. xx. | Take one at six A. M. and ten P. M., together with— | |
| | \mathcal{R} . Potassii iodidi, | \mathfrak{z} ss. |
| | Ferri ammon. citrat., | $\mathfrak{z}\text{j}$. |
| | Tinct. nuc.-vom., | $\mathfrak{z}\text{ij}$. |
| | Tinct. cinch. comp., | $\mathfrak{z}\text{iv}$. |
| | M. S. Teaspoonful directly after meals. | |

Under this treatment tuberculous ulcerative syphilides disappear rapidly, sore-throats quickly improve, and advancing alopecia is often checked very soon, with a speedy reproduction of the lost hairs. Some combine the mercury and potash in one solution, thus:

| | |
|--------------------------------------|-----------------------------------|
| \mathcal{R} . Hydrarg. bichloridi, | gr. j. |
| Potassii iodidi, | \mathfrak{z} ss. |
| Tinct. iodinii (B. P.), | $\mathfrak{m}\text{v}\text{ij}$. |
| Infus. carophylli, | $\mathfrak{z}\text{iv}$. |
| M. Dose, \mathfrak{z} ss. | (HILLIER.) |

TILBURY FOX discards all other preparations of mercury save the *bicyanide* (hydrarg. cyanidi), which he now uses exclusively. He gives it in $\frac{1}{12}$ -grain doses twice a day, in the pill-form, with extract of gentian, quinine, or opium, as the case may be, administering iodide of potassium at the same time, in five-grain doses, at first twice, and soon three times a day, with spirits of ammonia. BUMSTEAD advises to associate quinine with the preparation of mercury employed, which, besides its tonic properties, renders the drug less liable to salivate. Mercurial pills of all kinds are apt to irritate the bowels; this trouble is best remedied by a little paregoric taken as required.—L. D. B.]

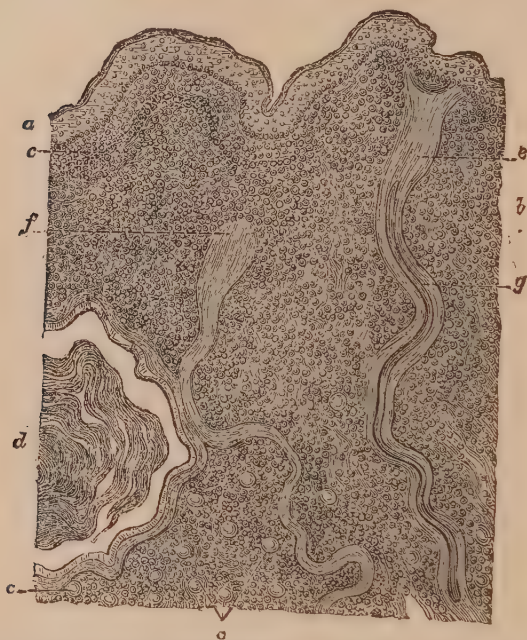
3. ELEPHANTIASIS GRÆCORUM.

Syn. *Lepra*, *Spedalsked*, NEUMANN; *Leontiasis*, *Satyriasis*, *Lepra Hebrorum*, *Lepra tuberculosa*, *True Leprosy*.—L. D. B.

This is an entirely different disease from Elephantiasis Arabum, and appears in several forms, as, elephantiasis maculosa, tuberculosa, and anæsthetica. Coppery red spots may appear as early as from the tenth to the fifteenth year of life, over the eyebrows and on the face, which may last for years, before they are developed into the tuberculous form (*leontiasis*). The prodromata are described as being, an uncommon feeling of weariness, indisposition to work, a melancholic expression of countenance; pains in the joints, bones, and muscles are afterward associated with these, and the nerves are often swollen, forming string-like bands. The spots, which have been called *vitiligo* (?) *alba*, *nigra*, *spiloplania*, and *lepra radiata*, are of a coppery red, and develop into tubercles; these latter are hemispherical or flat, more numerous on the extremities than on the face and trunk, especially frequent on the hands, arms, and feet. At the same time papules, resembling condylomata, are formed on the mucous membrane of the palate, larynx, and lips. The nodules soften, and ulcers are formed, or else the skin becomes dry, fissured, and wrinkled. The ulcerations gradually extend in depth; the muscles, tendons, and joints are destroyed; the bones, although they do not necrose, yet become enucleated as the soft parts are removed, and in this manner one phalanx after another drops off. Sometimes there is also a diffuse thickening of the skin, whose surface becomes covered with scales. The senses of hearing, smell, and taste, perish. The eye is likewise attacked, and we have

corneal opacities or contraction of the bulb. Ulcers are also formed in the internal organs, and tuberculosis of the lungs or intestines may terminate life. In elephantiasis anæsthetica there is at first painful hyperæsthesia, followed by anæsthesia. Motor paralysis may also occur, but is much rarer.

FIG. 39.



Section of a leprosy tubercle excised from the forehead.—*a*, Epidermis and rete Malpighi; *b*, Cutis, with cell-infiltration; *c*, Grouped accumulation of colloid bodies; *d*, Sebaceous gland eroded and enlarged, with stratified epidermal contents; *e*, Twisted hair-follicle, with an atrophied hair; *f*, Irregular connective-tissue band (formerly a hair-follicle?).

Anatomy.—The papillary layer is considerably elevated, and the whole cutis appears thickened. The tissue is filled with small cells, but little affected with acetic acid, so that the fibrillated connective tissue is seen but in places. The fatty tissue likewise disappears. The true seat of the morbid process is in the corium, where colloid cells are apparent, with homogeneous contents, and strongly-refractive powers (colloid degeneration), at first scattered, but afterward largely extended. In the upper parts of the corium are layers composed entirely of aggregations of colloid cells; large bands are also seen run-

ning from below upward, which, on closer examination prove to be hypertrophied cutaneous muscular fibres. The fine hairs are everywhere present, with their root-sheaths apparently unaltered, but are often bent or s-shaped, and reach very deeply into the corium. The sebaceous glands are, for the most part, destroyed, but, on the other hand, the hair-follicles are proportionally enlarged, and filled with horny epidermis, and dried sebum, and are present in abundance.

According to VIRCHOW, the new cell-formation (granulation) extends quite to the almost unchanged epidermis, as in lupus, and stretches thence deep into the subcutaneous cellular tissue. Generally the new tissue forms large tracts, many of which lie connected beneath each other, and have their greatest development around the hair-follicles, apparently taking their origin thence. DANIELSSEN and BOECK, KÖBNER and SIMON, furnish in the main similar results. These bands are prolonged into the subcutaneous tissue, and to the naked eye present an anomalous and rather transparent, shining, whitish-gray, or yellow appearance; the normal portions remaining between them are more white or yellow. The vessels enter the mass from below, and are present in moderate quantity. The cells have various shapes and sizes, according to the different conditions of development. Hardly anywhere is the growth of simple spindle and stellate cells so remarkable as here; small round cells continually make their appearance, between which the intercellular substance decreases more and more, and finally we see but small bands of slightly-striped masses, which become granular with acetic acid, lying between these rows or groups of cells. Within the still coherent tissue we often meet with nuclei, many cells perishing on dissection, so that "free nuclei" appear in abundance. The epidermal structures atrophy more and more in the further advance of the process; sweat- and sebaceous glands perish; even the hairs degenerate and form beaded swellings in their, follicular portion with lamellated epidermal protuberances, and break off at the level of the skin. When at their height, the cells appear as round, pale, faintly-granular, easily destructible elements, with one rather large, granular, nucleolated nucleus. Many are not much larger than red blood-corpuscles; most of them resemble ordinary lymph-cells; others attain the size of the largest mucous corpuscles.

Between the strips and the masses of new tissue, the surviving elements remain either entirely unchanged or they undergo a simple enlargement. This is especially the case with the *arrectores pilorum*.

The *leprous ulcer* commonly forms a dry, brownish, or dirty crust over its surface, beneath which a thin, ichorous secretion

exudes from a soft, discharging surface. But the tubercle of lepra has not a special tendency to ulcerate; as a rule, it requires especially unfavorable influences to produce this result.

In *morphæa nigra* we find dark pigment, principally in the rete Malpighii; in *morphæa alba*, a white cicatrix is immediately formed, from which the epidermis is shed. In *lepra anæsthetica* (nervorum) *mutilans* (see *Beiträge zur Pathologie der Lepra Mutilans*, by Dr. F. STEUDENER, of Halle), the same process occurs in the nerves, producing great thickening; the cellular hyperplasia is greatest around the neurilemma, so that this becomes thickened, callous, complete atrophy of the nerve finally ensuing with destruction of its medullary substance in great pieces, and with consumption of its axis cylinder. The coverings of the spinal cord are much thickened by a shining, colloid mass, which in some places entirely fills the cavity. The gray substance, also, of the spinal marrow is transformed into a similar colloid mass, and its nuclei are degenerated into colloid cells; the white substance is similarly changed. The ulnar, radial, and median nerve trunks are transformed into a thick, tendon-like tissue, the walls of the vessels and the neurilemma thickened, and the cellular elements increased; medullary portion and axial cylinder gone, and in some cases the former changed into a finely-granular mass (fat). The lymphatic glands therewith swell, and fatty metamorphosis of the cells takes place; sometimes the testicles are affected (KÖBNER).

Pemphigus leprosus (*Lepra sub adustionis specie latens*, SCHILLING; *Malum mortuum*, *Malmorto*.)—Bullæ arise, from the size of a pea to that of a walnut and over, filled with a milky fluid, while the process extends still deeper: at first the bullæ resemble pemphigus; they rupture and leave a deep scar behind: on other places we find only white spots, devoid of sensibility in proportion to their size. The perspiratory and sebaceous secretions cease, the whole surface is finally involved, contraction of the limbs takes place, fingers and toes drop off, and death follows, with diarrhœa and convulsions. Exudations are found in the brain and spinal marrow.

Etiology.—But one opinion prevails among all authors, and that is, that there is an hereditary disposition to elephantiasis, which ceases only when the relations, mode of life, and climate

are changed. In Norway the disease principally affects fishermen, who live in poor houses and on low diet. It originated on the marshy banks of the Nile, and at the present time also it is more prevalent in islands and maritime lands, as Mauritius, Madagascar, Madeira, the Grecian Archipelago, on the coast of the Black and Mediterranean Seas, Norway, and Greenland. Transmission occurs more frequently from the maternal than the paternal side. Sometimes the disease will skip several generations, and then reappear. It is seldom seen before the seventh year of life, generally after puberty: if occurring before this period, sexual development is hindered; the disease is most frequent in men.

Therapeutics.—Cod-liver oil, arsenic, iodide and bromide of potash, iron, mercury, sulphur baths, and bleeding, have been recommended. The radix mudar, from the *Asclepias gigantea* and the *Hydrocotyle Asiatica*, are principally employed in those countries where the disease prevails: the former in connection with mercury, and the bark of the mudar as a poultice with flaxseed; the active principle of the *Hydrocotyle* is the *villarin*. As yet, however, all remedies have proved useless.

[Two cases of elephantiasis have come under our observation, one, of the tuberculous variety in the practice of my father, Dr. H. D. BULKLEY; and the other, the anasthetic form, occurring in the New York Hospital while I was interne there. As neither of the cases has been yet published, I give them in full, each being indeed typical:

Elephantiasis Tuberculosa.—March 14, 1864.—B., a well-developed man, thirty-seven and a half years of age, with sandy hair and complexion, has always enjoyed good health, with the exception of occasional dyspepsia, although he has been very irregular in regard to eating. Had slight attack of cholera in 1849. Has never had venereal in any form. Was born in Connecticut, and always lived there, or in New Jersey or New York. Knows of no one similarly affected.

About eight or nine years ago was troubled with itching of legs and somewhat of arms when overheated; no eruption then, except a "bunch," if he scratched himself. This state of things lasted two years; then some brown spots, an inch in diameter and under, appeared, not elevated. General health was good at the time, except dyspepsia and some flatulence, never constipated. After spots had lasted two years, he began to have flushes of the head; face and hands were much swollen, and about the same time also elevations began to appear on face, hands, and feet. These elevations have been constantly, though slowly, increasing ever since; have

never grown less, and have never disappeared from any part. Had mental trouble from financial matters about the time of their first occurrence. About two years ago he began to have sense of fulness in nose, like catarrh; very little discharge; it bleeds often, though little, when he blows it. Mouth commenced to be sore five or six months since. Has had hæmorrhage from bowels twice within a year, felt weak afterward, but took nothing for it.

Present Condition.—Appetite fair, bowels regular; pulse 78, and natural; skin soft; urine deep-yellow color and clear, deposits but slight sediment on standing, decided “hay” odor, sp. gr. 1.030; has never noticed that the quantity is more or less than natural; does not rise at night to pass water.

Skin.—Face and forehead of a dull-red color, and more or less covered with brown elevations, varying in size from the head of a large pin to that of a pea; some rather larger, and some increased in size by the union of several nodules. Tubercles of same kind and average size on hands, feet, and fore-arms; some of those on the hands are of a deep-purplish color; none on body, arms, or thighs; seem worse on the parts exposed to air. Complains of great sensitiveness of skin when elevations begin to appear, which has continued ever since, especially where the eruption now is. Skin of back and abdomen of a dusky-brown color, with spots of brownish discoloration; no elevations. On front and inner parts of thighs dark-brown and purplish spots are scattered, circular, about the size of split-peas; subcutaneous swellings, on some parts, very slightly elevated, like hard, oblong tumors. Has eruption also on feet, but not so much elevated, more like simple discolorations; some thickening of epidermis about sides of feet. Roof of mouth thickly sprinkled with oblong eminences, two to four lines in longest diameter, covered with grayish exudations; one of them ulcerated, and presenting an excavated ulcer with clean-cut edges and reddish, slightly-granulated base. Uvula about one-third larger than natural, with a depressed ulcer at its base, about three lines long; roof of mouth, near base of uvula, is covered with a slight dingy secretion, with a color resembling that produced by nitrate of silver. These prominences present the feeling of induration to the finger. Posterior fauces, covered with dirty, yellowish mucus; no elevations seen there. Surface of both tonsils similarly affected. Some pain when mouth gets dry; also when he takes any thing hot or cold. Gums healthy, secretion of saliva scanty; never used tobacco. Has small, round tubercles on red border of upper lip; two also on top of lobe of left ear, and three on top of right ear.

Has small glandular swellings at nape of neck, also a glandular enlargement of some size in right groin, and a small one just above each olecranon process; that on right rather larger than the other.

Microscopic Character of Tumors, furnished by Dr. WILLIAM H. VAN BUREN.—The histological elements consisted of cells, and the elements of connective tissue, the cells being in larger proportion. These latter were various in character, some being large and oval, with large nuclei and distinct, brilliant nucleoli, recalling myeloid cells; and others being fusiform

and spindle-shaped, with similar nuclei, and suggesting the idea of transformed connective-tissue cells. There were also in the field numerous free nuclei. The discharge scraped from the surface of the ulcer at the base of the uvula showed simply pus and epithelial cells.

March 21, 1864.—General condition about the same; pulse 68. Ordered generous diet; and *R. Sol. Fowleri*, 3jss; *ferri ammon. cit.* 3j; *tinct. nuc. vom.* 3ij; *tinct. cinch. co.* $\frac{3}{4}$ iv. *M.* Take one teaspoonful after eating.

April 19th.—Taken medicine regularly. Eruption about the same. Does not feel so well. Cannot sleep well, on account of pain from dryness of mouth, caused by occlusion of nostrils. Ordered iodide of potassium with muriate of ammonia.

May 7th.—Very weak; pulse 120; legs swollen; complains of thirst; sweats freely. Continue last medicine, with addition of iron and cinchona, as in former.

June 27, 1868.—Took medicine last ordered for four months or longer. Has used no medication of any kind for two years. Ulceration on back of all fingers of right hand; began with little finger from injury. Eruption on face improving; face still "marbled;" has an induration at centre of tongue, oblong, one and a quarter inch in longest diameter, which is parallel to that of the tongue; of same color as the tongue, fissured through middle. No ulcers in throat, but some thickening; pulse 74, regular. Is taking "Columbia Spring Water," tumblerful three times daily. Has relaxed considerably from business.

December 2, 1868.—Not so well; disease seems to be spreading. The ulcers on right fingers have about healed, but have broken out again; and also ulcers have appeared on left, the fingers of which are stiff. Toes likewise affected; sores in nostrils. Has been at Columbia, near Hudson, drinking and bathing in the sulphur-water, he thinks, with a little benefit. Ordered: return to mixture of May 7, 1864, and dress ulcers with zinc-ointment.

January 21, 1869.—Has taken some quack remedy, which his wife thinks did him good; last mixture did not agree with him.

April 27th.—Worse; back of hands, feet, and wrists, ulcerated; have never healed. Weaker; had diarrhœa and piles. Medicine disagrees; return to the Fowler's solution, as ordered March 21, 1864.

June 7th.—Eruption increased on face; hands and feet almost entirely healed; nose little smaller; throat much better; tongue less swollen; some diarrhœa. Continue arsenic-and-iron mixture.

The patient has not been seen since, up to time of writing, September, 1871.

The second case I give from notes, which I took myself while resident in the New York Hospital.

Elephantiasis Anæsthetica.—C., aged twenty-five, a resident of Cuba, was perfectly well up to eight years ago. Then, while living in Havana, he noticed a sore on little finger of left hand; this progressed by ulceration; the finger dropped off in portions, commencing with the last phalanx; the

stump soon healed. The middle finger next followed the same course. The disease then passed through all the fingers and thumb of left hand, amputating them at the metacarpo-phalangeal joints. Immediately on healing of left hand, the right was invaded, and ran through the same course, the little finger going last. Patient states that no two fingers were affected at the same time, one always healing up before the next was attacked. *He suffered no pain* during the progress of the destruction of the fingers, and *was otherwise in perfect health*. His feet were never troubled. Patient knows many who were similarly affected, the disease being very common in some portions of Cuba. The whole time occupied in this mutilation was three years, at the end of which time, i. e., five years ago, he came to live in New York. He has since enjoyed good health until three years ago, when he had left foot frost-bitten (?), and the same process of disorganization proceeded until all the toes were lost. Patient felt well during the time, suffering *no pain*. Very soon after, his right foot was similarly affected, after a supposed frost-bite, and was deprived of a few terminal phalanges. Since then he has enjoyed excellent health, and has been able to go about very comfortably, suffering no inconvenience from his feet.

Five days before admission to hospital, his right ankle, from no apparent cause, became red and swollen, so that he could not get on his shoe. He has had considerable febrile disturbances, little delirious on night of admission.

General condition is poor, pulse quick and feeble, skin hot. Erysipelatous action in right leg, right ankle swollen and cedematous. Patient has no fingers on hands, the disease, moreover, having left stumps which put human surgery to the blush. Has several tuberculous patches on various parts of body, which come and go, and are frequently ulcerated. Has difficulty in talking, under lip hangs down and is swollen, the patient raising it with the hand when conversing—seventh pair of nerves seem partially paralyzed. Anæsthesia complete in legs up to knees, and in arms to elbows. Ordered, *R. Ferri et quin. citratis, gr. ij, every two hours.*

February 8th.—Erysipelas of leg diminished; skin excoriated in places about ankle. Fluctuation over each malleolus. Patient delirious little last night.

February 11th.—Abscess over ankle opened spontaneously and discharged much pus. Those over the two malleoli connect. *No pain* from handling or probing.

February 12th.—Difficulty in talking increased, lower lip more unmanageable—cannot laugh, or close eyes completely. Ordered, *pii. Asiatia.*

April 15th.—Patient was transferred to the surgical division, and I find from their note-books that portions of dead bone from time to time came away from the ankle, with a moderate discharge of pus. The general health continued fair. On this date the right leg was amputated at its lower third, under ether, and the vessels secured by acupuncture.

May 15th.—The wounds closed by primary union, and the health was much improved. Patient fell a number of times, striking the stump, without any ill effects. At this date he left the hospital, and I have not heard of him since.

Three prominent circumstances will at once strike the observer of these cases, which illustrate perfectly the differences of the two varieties included under elephantiasis. First, the obstinacy of healing in the former, and the readiness of the same in the second case. Second, the presence of pain in the former; its complete and wonderful absence, and of sensibility as well, in the latter. Third, the tendency to rapid destruction in the anæsthetic variety, and the perfect preservation of the members in the tuberculous form. Space forbids my entering on this highly-interesting subject more at large, and I must refer the inquirer to Prof. Wilson's lengthy and interesting analysis. BERKELEY HILL considers the evidence ample that syphilis and leprosy have nothing common.

NGERENGERE, an affection of New Zealand, is referred to by English writers as a disease analogous to anæsthetic leprosy, on the strength of Dr. THOMPSON's article in the *British and Foreign Medico-Chirurgical Review*, April, 1864, to which I must refer the reader for a description.—L. D. B.]

B. TUMORS.

Syn. *Homœoplasia*, *Heteroplasia*, *Neoplasma*, *Pseudoplasma*, NEUMANN.

By *tumor* we understand a new formation which continues to grow as long as the patient lives, without having any typical conclusion, and whose tissue is more highly organized than that of inflammation. Tumors were formerly divided into homœoplastic and heteroplastic, and this, from the view that the former corresponded in their structure more with the normal tissues, while the latter were foreign to their organism and its tissue-elements. As we shall soon see, this division is no longer tenable, for tumors of every kind are made up of physiological elements. The homœoplasia were also considered as benign, and the heteroplasia as malignant tumors; but this assumption was shown to be erroneous. VIRCHOW recognizes homœoplastic and heteroplastic structures, the former being like the matrix, while the latter is unlike, as, for example, cartilage in the testicle. The division into benign and malignant is useful clinically, if we consider those *malign* which have a rapid growth, return after extirpation, and which are painful; the others, designated as *benign*, increase slowly, and do not recur, although they also may become malign from their loca-

tion, as when they affect the brain or heart, or from their great number.

It was formerly believed that every thing foreign to the organism must proceed from connective-tissue cells. BEER, REMAK, and KÖLLIKER, THIERSCH, HISS, and REICHERT, have sufficiently proved that the disposition to certain tissues is implanted in the embryo, so that similar elements alone can come from similar, and only a certain determined tissue can grow in a definite manner from a germinal layer. In this sense we can no longer speak of tissues heterologous to the organism.

Another question arises, Whence come the cells that compose the new formation? At first, it was thought they were developed from the products of exudation (HENLE, ROKITANSKY). This view is now abandoned, for we know that there are other sources of new formation. Cell-proliferation takes place—
 1. *From a division of cells*, protoplasm and nucleus dividing into two, four, etc., cells; 2. *From germination*, i. e., by a portion of a cell extruding, and a nucleus being afterward formed (by nerve-fibre); 3. *From endogenous development*, in which numerous nuclei arise within the cell, each of which becomes provided with protoplasm, and appears free on the surface. Some cells come from the blood, by an escape of the white corpuscles through the capillary walls (WALLER, COHNHEIM), and either remain as such unaltered, or assume the character of that tissue into which they have wandered. Connective-tissue cells multiply either by subdivision, or possibly have their origin in these migratory cells. The connective tissue generally furnishes the starting-point for most new formations.

The tumors which most interest the dermatologist have been already in part described under Hypertrophies, a definite boundary between these classes being impossible; we still retain the clinical division benign and malignant, which, although having no histological basis, is yet appropriate practically; among the former we will describe *Keloid*, *Fibroma*, *Molluscum*, *Teleangiectasis*, *Papilloma*, and *Atheroma*; under the latter, *Carcinoma epitheliale*.

1. KELOID.

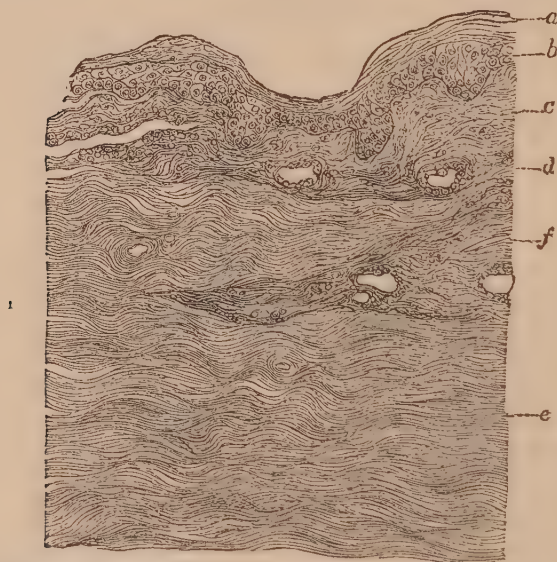
Syn. *Cheloid*, NEUMANN; *Kelis*, *Cheloidea*, *Cancroide*.—L. D. B.

This is a fibroid new formation of connective tissue, affecting the surface of the skin, in the form of white, or pale-red, cord-like elevations, commonly found isolated on the upper portion of the trunk or extremities, and sometimes on the face; the tumors are homogeneous, and of various sizes, anastomosing like a net-work, and are often present in great numbers. ALIBERT originally called this affection *cancroid*, but afterward returned to the name *keloid*. He distinguished the true keloid (*keloides genuinum*), and the false (*spurium*); the former is developed spontaneously without any known cause, the latter develops from the cicatrices of burns, operations (bleeding, leeching, and sutures), also after small-pox, syphilis, and acne indurata, being especially frequent on the breast and back. The considerable amount of pain present distinguishes it from an ordinary cicatrix. The tumor begins, as before-mentioned, with a whitish, yellowish, or brownish, sharply-defined discoloration of a portion of the skin from the size of a lentil to that of a silver dollar, whose neighboring parts are also more or less reddened; this discoloration may disappear again or remain unchanged for years, or it may gradually increase in size. Itching, tension, and contraction, with considerable pain, now set in, which are augmented by pressure and friction of the clothing; some parts now become depressed and form slight furrows, and others are elevated to whitish, sometimes yellowish-red nodules or bands, which are prolonged like cords in or beneath the surrounding healthy cutis, and these in turn wrinkle or contract. The whole resembles an hypertrophied scar following a burn. The subcutaneous cellular tissue is involved in the process of induration; the hairs generally fall out. The participation of the nerves is shown by the severe pains which at times alternate with deranged sensibility; complete anæsthesia has never yet been observed, but there may be an absence of pain during the whole course of the disease. The consequences are those which follow in general from contraction of the skin, and vary according to its location; permanent flexion or extension of the joints, with a limitation or a complete suspension of move-

ment, hinderance to mastication, a loss of expression of the face, atrophy of the affected muscles, etc.

Anatomy.—The changes found in the true keloid (Fig. 40) are as follows: it consists in a new formation of connective-tissue bands running parallel to each other, which are deposited like wedges in the substance of the corium and completely supplant it; in a further stage the whole derma is completely filled with these bands. Cell-proliferation occurs along the vessels. Sebaceous and sweat glands are at first unaltered, afterward they disappear.*

FIG. 40.



Section of a keloid (from the forehead).—*a*, Epidermis; *b*, Rete Malpighii; *c*, Tissue of the cutis; *d*, Remnant of the cutis; *e*, Tense fibrous keloid-tissue; *f*, Cell-infiltration around the vessels.

The development of the tumor, therefore, proceeds in the following manner: Along the vessels, especially the arteries, appear spindle-shaped cells, which extend as broad bands even into the normal tissue. This change in the walls is especially marked on the edge of the new formation, and in those places

* While the first edition of this book was going through the press, an admirable essay by Dr. WARREN came to hand, in which the facts mentioned were described independently of my work (*Sitzungsberichte der kais. Akad.*). WARREN believes that the recurrences of the affection are caused by the cell-growth around the vessels.

where the arteries send their branches to the papillæ. The development of the disease, therefore, originates from the vessels of the corium.

No difference can be discovered with certainty, microscopically, between the true and false keloid (WARREN).

Treatment.—This has as yet been unsuccessful. In but few cases has it been possible to exterminate the keloid by repeated operations. Caustics, tincture of iodine, and iodized glycerine, are useless; likewise the chromate of potash, recommended by LISFRANC, and the biniodide of mercury, of PITHA; DUMREICHER succeeded in removing a keloid of the lip with a mixture as follows: \mathcal{R} . Plumbi acetat. 3j; aluminis, 3ss; ung. simpl. 3j. M.

2. FIBROMA MOLLUSCUM.

Syn. *Molluscum Simplex*, NEUMANN; *Ecphyoma Mollusciforme*, *Multiple Tumors*.—
L. D. B.

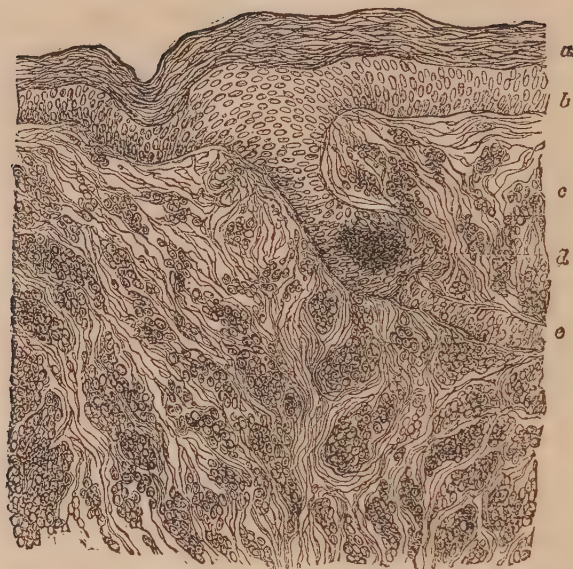
These new formations assume the shape of soft, purse-like appendages to the skin, from the size of a pea to that of a hazelnut or even larger, attached by a small pedicle, and occur singly or scattered over the whole surface. The region of the neck, the female nipples and labiæ, are favorite locations for these growths.

The tumor is sometimes congenital; more frequently it appears later in life, grows very slowly, and may, besides occasioning considerable disfigurement, be dangerous to the patient, from the great size sometimes attained; they have been known to weigh forty pounds; they may become gangrenous, and cause death by marasmus or pyæmia.

Anatomy.—The microscope shows the tumor to consist of young gelatinous connective tissue (Fig. 41), which forms large interstices, containing a yellowish, expressible, albuminous fluid, and traversed by a delicate, fibrinous net-work. VIRCHOW concludes that the deeper tumors take their origin in the panniculus adiposus, while others are developed from the corium. Within the areolæ we find also numerous cells (VIRCHOW's *granulation tissue*). There are also enlargement of the sweat and sebaceous glands, and increase of pigment in some tumors.

Treatment.—Since the tumors are attached only by a very

FIG. 41.



Fibroma molluscum.—*a*, Epidermis; *b*, Rete Malpighii; *c*, Cutis filled with cells; *d*, Section of a sebaceous gland; *e*, Epithelial band.

thin pedicle, they may be readily removed by the knife, scissors, ligament, *écraseur*, or galvano-caustic loop. Considerable hæmorrhage sometimes follows their removal, owing to the generally-enlarged blood-vessels; this, however, may be quickly controlled, especially by causing the wound to heal speedily by primary intention.

TELEANGIECTASIA.

Syn. *Angioma*, *Nævus vascularis*, *Gefässmal*, *Gefässgeschwulst*, NEUMANN; *Nævus sanguineus*, *Taches de vin*, *Claret-stain*, *Mother's Marks*.—L. D. B.

This new formation is seen on the surface of the skin as bright or dark red, or even purple tumors, fire-marks (*nævus flammeus*). The color depends on the depth of the location of the tumor, and also on its communication with arterial or venous vessels. The more superficial its location, the lighter colored it is, and, the deeper it is situated, the darker will be the color; further, the lighter colored are arterial and more rare, those of deeper hue are venous. Their size varies, some are punctate, some the size of a small penny or upward; they

may even include large portions; thus the whole face, neck, and extremities may be involved. Sometimes they are extended superficially, and form flat tumors, whose characteristic peculiarity is tumefaction. As a rule, they are congenital, and are more frequent on children than adults. There are but few infants who do not have within the first few months of life, on some part of the skin, one or more reddish spots, consisting of newly-formed vessels; most of these, however, disappear spontaneously.

Nævi consist partly of distended, partly of newly-formed capillaries, the new structure affecting circumscribed vascular regions of the cutis, as those of the sweat-glands, hair-follicles, and adipose tissue, so that the whole tumor has to the naked eye an acinous structure. Sometimes we find fatty and connective tissue between the vessels. There is no doubt that there exists a certain disposition to such vascular enlargements, which is in a great measure hereditary; they enlarge slowly in height and breadth, and are painless.

They differ from the tumor cavernosus in structure, in their slow growth, complete absence of pain, and, finally, the tumor cavernosus is almost never congenital.

Nævi vasculosi—called also mother's marks—are different from the teleangiectasia, in that they remain stationary after birth, while the latter, as already mentioned, generally extend.

Treatment.—As these tumors frequently disappear spontaneously, therapeutical interference is only to be thought of when they are persistent or still enlarge.

Besides extirpation with the knife, galvano-caustic, acupuncture, and ligature, the following methods are worthy of consideration:

1. The mixture recommended by ZEISSL—℞. Antimon. et pot. tartrat. grs. xvij; empl. adhesiv. ʒij. M. Dr. CUMMING (the *Lancet*, 1854) recommends the same, fifteen grains to the drachm of empl. resinæ, spread upon leather, and left on seven or eight days.

2. Hypodermic injection of equal parts of liq. ferri sesquichlor. and water.

3. Inoculation with vaccine lymph.

4. Frictions with croton-oil.

5. Cauterization with sulphuric or nitric acids.

I have used by preference the first method, when the tumors had the average size of from that of a three-cent piece to that of a small penny, were moderately elevated above the level of the skin, and were, for the most part, located on the scalp. This plan has unquestionably the advantage in flat tumors, inasmuch as it is applied without inconvenience; the pain is very trifling; and, finally, because the scars resulting are very thin and superficial. The disadvantages are, the long duration of the cure, and the severe suppuration caused by the antimony, which, on the scalp and forehead, is unpleasant, to say the least. But this slight evil is of little importance compared to the advantages gained. The cicatrices resulting from removing *nævi* in this manner are very white, soft, and thin; the hairs also grow again, although not until after several months—a fact not to be undervalued in tumors of the hairy scalp.

I have used injections, with a hypodermic syringe, of the sesquichloride of iron, in the proportions given, in one case. I was not able to obtain the advantage claimed of coagulation of the blood with subsequent shrinking of the tumor, but the tumor became gangrenous each time; the eschar was separated in from fourteen to twenty days, leaving a deep loss of substance, which was replaced after a long time by cicatricial tissue. I took the precaution to use this method only in tumors on the breast and back.

The method of vaccination, which can only be employed in children who have not been vaccinated, I have also used in some cases, and the result was surprising; I present one case as especially worthy of note. It was that of a child two years old, with a vascular *nævus* embracing both *alæ* and the apex of the nose, in the form of a many-lobed tumor, elevated above the level of the skin, which had even involved the mucous membrane of the nasal cavity as well. As a bloody operation was impracticable in this case, on account of the danger of disfigurement, I concluded to make the experiment of vaccine lymph. I took a large quantity of fresh matter, inserted it by means of an inoculation-needle, making about ten punctures, superficially and deeply. On the eighth day the pustules were

completely developed, and many of them were confluent: the whole tumor became covered with a crust, which fell off spontaneously in the course of four weeks. After this I kept the child for several weeks under observation. The tumor had considerably diminished in size, and, as its complete disappearance immediately could not be expected, I sent the child to its home. When I saw the child one year after, but slight traces of the tumor were visible here and there through the delicate cicatrix.

Friction with *croton-oil*, which produces pustules like those of tartar-emetic, is inferior to it. Inoculation with croton-oil, in a manner similar to that employed with vaccine lymph, especially in those who have been already vaccinated, and where no further vaccination would take, brings out such a reaction that in one case I had a severe lymphangitis to combat. Sulphuric and nitric acids produce good results.

4. PAPILLARY TUMORS.

True papillary tumors, that is, verruca, cornu cutaneum, condyloma, and ichthyosis, have already been described under the Hypertrophies, and we will therefore mention here a single variety, which is sometimes flat, sometimes pedunculated, and which has small warts on its surface; it reaches the size of a pea, or a nut, or over; is found especially on the penis, hands, and feet; and consists of hypertrophied papillæ, with dilated vessels. Roughly considered, this tumor is only a compound wart, and, like it, can be easily removed.

The inflammatory cutaneous papilloma consists, according to ROSER, of an inflammatory outgrowth of the papillæ, whereby intra-papillary abscesses are formed. The knotty, swollen papillæ enlarge at their summit, and, an orifice forming at their base from the accumulation of pus, a sound can be introduced beneath the hypertrophied spot. These papillary tumors come on the hands and feet.

5. ADENOMA.

The glands of the skin may, in a manner similar to the other glands (*mammæ, prostate*), give rise to the formation of tumors. RINDFLEISCH describes an adenoma of a sweat-gland.

As already stated, the same observer considers lupus to be a sebaceous adenoma, which, according to our view, is true only of lupus erythematodes.

6. CARCINOMA AND SARCOMA.

Under this head come all forms of carcinoma and sarcoma, as the epithelial cancer, that is, the glandular cancer of the skin and mucous membranes; the fibro-glandular cancer, which sometimes appears as an infiltration of the corium; the medullary-gland cancer, in which a structure resembling gland-substance predominates; and sarcoma melanodes.

a. EPITHELIOMA.

Syn. *Epithelial Cancer, Carcinoma epitheliale*.—NEUMANN.

By this name we designate a new formation, taking its origin in the skin or cutaneous glands, which soon extends to the lymphatic glands, and which returns in the same place after extirpation, being finally fatal by marasmus.

As cancers are principally epithelial growths, having rather a glandular structure, which will be more clearly seen when we come to their anatomical study, we will describe, as the prototype, the variety which especially interests dermatologists, namely, epithelioma (*cancroid, papilloma*). This appears, according to SCHUH, in the following forms: a. Flat; b. Alveolar or granular; c. Wart-like.

a. The *flat or level cancer* affects principally the lips, cheeks, nose, and forehead; does not appear till late in life, and develops from papules which suppurate, leaving a slight loss of substance whose periphery is surrounded by a hard wall. The process always lasts many years, without further affecting the organism, but finally death ensues from exhausting marasmus. The alæ of the nose, upper lip, and eyelids, may be completely destroyed.

b. The *alveolar cancer* extends both in breadth and depth; its elements are grouped in a clearly alveolar order; it frequently runs a very rapid course, and continues to increase, with considerable pain. Papules are first formed, which are movable under the skin; they afterward run together, and soon break, leaving extensive ulcers. This form occurs mostly

on the cheeks and extremities, but oftenest on the mucous membranes.

c. The *wart-like cancer*, as the name indicates, takes the form of knobs, wart-like or cauliflower excrescences, and differs from ordinary warts only in its rapid growth, whereby it extends deeply, and progresses with infiltration of the neighboring parts. It forms roundish, painful tumors, which are covered with crusts.

Anatomy.—The epithelium of the skin and its glands in epithelioma is prolonged into the tissue of the cutis in the form of roundish cylinders, which sometimes causes it to be of a firmer consistence, and sometimes renders it softer, interstices being formed, in which these are found; with this we have partly an enlargement of the existing vessels, and partly a new formation of the same (BILLROTH). In epithelial and glandular carcinoma, there is a great accumulation of epithelial cells, and enlargement of the same within the glands; these soon consolidate and form nodules, in whose centre we frequently find larger cells, with numerous secondary cellules in their interior. We often meet also with the stellate or fusiform cells. Between the fibres of the dissected connective tissue, alveolar interstices are formed, which are filled with the cells mentioned; at the same time we have enlargement of the papillæ, and new formation of vessels. In other cases the epithelial cells necrose, and an ulcer is formed; or, finally, the epithelial elements may increase in the cutis, and thus form an infiltration (flat, infiltrated epithelial cancer). The epithelium of the sebaceous glands also increases coincidently, and the connective tissue is infiltrated with small cells. The whole hardened tissue is finally cast off, and ulcers are formed, which cicatrize while the disease progresses in the periphery. This view, as to the formation of carcinoma, was first promulgated by THIERSCH, and BILLROTH afterward agreed to it; it is entirely opposed to VIRCHOW's view, which makes epithelial carcinoma to have its origin in the connective tissue. PAGENSTECHER, of Heidelberg, found that, in carcinoma, the epithelial cells migrate from the corium into the rete Malpighii, one half the cell being seen in the papilla, while the other half remained in the rete Malpighii. These cells have an independent locomotion, and develop into

epithelial cells ; therefore the migrating cells, namely, the white blood-corpuscles, which travel from the vessels, furnish the most important material for the new formation of epithelial cells.

Treatment.—The dermatologist should interfere in carcinoma only in those cases which have the character of an epithelioma, and are easily destroyed by caustics. The caustics, which are used in milder cases, that is, when we have to do with the beginning of the disease, are, nitrate of silver, in substance, or in solution with equal parts of water, and LANDOLFI's paste, as used in lupus. Caustic potash in substance, Vienna paste, CAUCOIN's and COSME's caustic pastes, and likewise the galvano-caustic, may be employed. We have also had good results from COSME's paste as modified by HEBRA.

b. CARCINOMA CUTIS.

This is generally a medullary cancer, and is, on the whole, a rare affection ; it is developed as follows : There appear swellings in the corium, from the size of a hemp-seed to that of a pea, which seem reddish, through the epidermis, which is at first movable over them ; these nodules enlarge gradually (or quickly) in breadth and height, growing with the skin finally from the size of a large nut to that of the fist ; they subsequently ulcerate and become covered with thick crusts. Sometimes the whole tumor disintegrates, and, becoming gangrenous, is separated, leaving a flat cicatrix ; in other cases only a portion of it perishes, and the remainder becomes covered with skin. Occasionally, it happens that the lymphatics between the tumors can be felt as hard, compact cords. The new formations can exist for years on an extremity, without causing any pain or affecting the appearance of the patient. The whole surface may be gradually involved, so that only islands of healthy skin are left between the tumors, which ulcerate, and the patient dies of pyæmic fever. In the necropsy we generally find similar nodules in the internal organs also. As long as the tumors are hard, they have the character of the fibrous carcinoma ; when they soften, that of the medullary.

c. SARCOMA MELANODES.

This form differs from ordinary sarcoma in the presence of pigment; it is seen mostly in the form of dark-colored, wart-like structures, which sometimes last for years without extending further; they then may grow very rapidly, so that the patient dies in a short time with the symptoms of marasmus. On *post-mortem* section, we find melanotic sarcomatous deposits in the inner organs as well, especially in the liver and lungs.

CLASS VII.

PIGMENTARY ANOMALIES.

THE cells of the rete Malpighii, as is known, contain, in the normal condition, a variable amount of pigment. Its deeper layers are darker, the more superficial lighter colored, and in the horny layer the coloring-matter is entirely absent. In the negro this pigmentation is deeper than in other races. The darkest hue is found on the areolæ of the breasts, on the skin of the penis and scrotum, on the labiæ, and around the anus, and, indeed, in these places, the skin of our race does not differ much from that of the negro. The shade of the skin depends on the quantity of pigment in the rete Malpighii, the grade of injection of the skin and the thickness of the epidermis having also some influence.

Discolorations of the skin, however, do not always depend on anomalies of pigment; much oftener do we meet with alterations in color, dependent on changes in the quantity and quality of the blood, the presence of abnormal coloring-matters in the system, following repeated extravasations, and, finally, from the deposition of foreign pigments in the skin. We see a general pallor of the skin, for example, in chlorosis or dropsy; an uncommonly deep hue of the skin is seen in full-blooded persons, especially drinkers; the well-known icteric tint results from the circulation of the coloring-matter of the bile in the blood-current, and the peculiar dark tinge of sarcoma melanodes, from the assumption of black pigment by the blood. We shall see, hereafter, how a deep staining results from the continued use of certain alkaloids.

The normal cutaneous pigment may be morbidly increased or diminished; as a rule, however, the increase and diminution are so combined that some portions of the skin are darker, and those immediately around them lighter, than normal.

a. INCREASE OF PIGMENT.

Pigmentary augmentation takes various forms, of which the following are the principal: *nævi*, mother-spots, *ephelides*, freckles, moles, *lentigo*, *chloasma*, *melasma*, etc.

Nævi lenticulares.—These are small, dark-colored, sharply-defined spots, from the size of a pin's-head to that of a bean; mostly congenital, light or dark brown, and somewhat elevated above the level of the skin.

Nævus spilus.—This comes in the form of lenticular spots, or may embrace a great extent of surface; is mostly of a brown or black color; either flat or having numerous wart-like prominences; bald, or bearing long, thick, and dark hairs. The pigment is found in both the mucous layer and also the corium, and is in the form of molecules, granules, and crystals (ROKITANSKY), which are either free or collected within obliterated vessels. This complexion of the skin is often associated with a similar state of the internal organs, especially of the brain and spinal marrow, also of the blood; the papillary layer and the corium are hypertrophied.

Nævus Mollusciformis seu Lipomatodes.—Soft, wart-like, dark-colored tumors develop, sessile or pedunculated (*fibroma* and *sarcoma*), which either occur singly or in great numbers; some are of large size (*lipoma*), and covered with a darkly-pigmented skin. Besides these, on all persons, we often find brown or black protuberances, flat, with broad bases and wart-like, coming principally on the back and face, in which the epidermis and rete Malpighii are, as a rule, of normal color, while the derma is of dark hue.

Melasma, melanoma, melanosia, nigrities, is an acquired discoloration of the skin, affecting principally the lower extremities, but which may include the whole surface; it is seen mostly in wine-drinkers, and, after *pediculis vestimentorum*, in consequence of numerous extravasations coming from severe

scratching; the skin resembles that of the negro. A similar melanosis is frequent in horses.

Ephelides (*summer spots, freckles*) are light or dark brown spots, roundish, from the size of a pin's-head to that of a bean, appearing principally on the uncovered parts of the body, but which may come also on those which have been protected, as the back, penis, and breast; they are pale in winter, and grow darker in summer, and are of the deepest color at the openings of the follicles. The portions of the skin free from ephelides are generally very white, because the pigment, evenly distributed over the skin in the normal condition, is now withdrawn from those parts, which consequently appear lighter.

Chloasma uterinum, wrongly called *chloasma hepaticum*, is seen in women suffering from menstrual disorders, and may occur during pregnancy or the puerperal state. Tumors and polypi of the uterus and diseases of the ovaries are very frequently associated with chloasma; the forehead, eyelids, cheeks, and upper lips, are principally affected, which then commonly take on a dark-brown color. The same staining likewise happens in the male sex, after long-continued malarial diseases, as also in the dyscrasic affections, as in extreme tuberculosis, carcinoma, and melano-sarcoma. Long-continued action of the sun's rays, especially in a moist atmosphere, continued labor during the summer heat in tropical climates, or even our own, will produce an increase of pigment (*pellagra*).

In addition to these, we have pigmentary deposits attending chronic cutaneous affections, as *prurigo*, *psoriasis*, and *eczema*; also after long-existing *scabies*, *syphilis*, etc. This is frequently the result of scratching. The method is as follows: A certain quantity of blood is extravasated from the lacerated blood-vessels, or else the coloring-matter of the blood (hæmatine) alone is diffused through the tissue, and finely-granular masses of hæmatoidine are deposited in the cutis. The *melanin* seen after burns and gangrene, and in new formations of the skin, comes in a similar manner (WEBER).

In many persons the application of a *mustard-plaster* suffices to produce a brown spot on the place of application, which remains for a long time; a dark color of skin is quite often left after wounds and ulcers. The pigmentary deposits just de-

scribed differ from syphilis and chloasma, in that the pigment is not confined to the rete Malpighii alone, but is also found in the corium.

The long-continued use of *nitrate of silver* and *arsenic* leaves a dark stain, evidently because these substances are deposited in the form of albuminoid compounds in the substance of the corium, and probably in the cells of the rete Malpighii as well, undergoing further alterations there under the influence of the light. The same seems to be the case in *morbus Addisonii*.

The vicinity of the pigmented patches is always lighter colored, whereas the skin adjacent to pigmentless parts is of a darker color; the darkly-affected portions have likewise, as a rule, similarly-colored hairs, and conversely, the hairs or leucodermic patches are more or less deficient in coloring-matter, or completely white. The senile skin presents a decided increase of pigment.

In certain anomalies of pigment there seems to be some connection with neuropathic affections, and pigment accumulations (*nigrismus*), as also deficiency of pigment (*albinismus*), are possibly dependent on disturbances of the vaso-motor nerves (BEIGEL); in the diseases above mentioned, and in typhus fever, intermittent fever, etc., the nervous system may influence pigmentary deposition, for nerve-affections are frequently connected with other cutaneous diseases.

Treatment.—The removal of pigment is readily accomplished by such means as cause a superficial inflammation of the skin, and result in desquamation of the epidermis. Among the remedies employed, the best is corrosive sublimate (gr. v ad aq. ʒj). The affected portions of skin are covered with pieces of linen, accurately fitted, and kept moist with the solution for three hours. The edge of the cloth should be continually dried, as otherwise the solution will collect and destroy too deeply.

Repeated applications of tincture of iodine, or iodized glycerine, or corrosive sublimate in collodion, also give good results.

The gradual separation of the epidermis may be obtained by means of an ointment, consisting of \mathcal{R} . Bismuth subnitrat., hydrarg. præcip. alb., āā ʒj; ung. simpl. ʒij.

I have used with equal success concentrated acetic acid,

which, as is known, produces a rapid swelling of the epidermal cells; this I have employed either alone or rubbed into a paste with lac sulphuris. The disfigurations return in most cases.

As to the treatment of nævus, a successful result is possible only in those cases where the pigment is located in the rete Malpighii alone, or, where the discolored hypertrophied papillary layer so far projects that it can be completely removed with the scissors, which is the case quite often in nævus hypertrophicus, and especially in nævus molusciformis. In these cases, relapses seldom occur, while they are frequent in the flat nævi after the removal of the pigment. Small, wart-like excrescences are best removed by the concentrated acids, especially the carbolic; hypertrophied hairs are to be extracted with the forceps, or the hair-papillæ destroyed with galvano-caustic.

b. DIMINUTION OF PIGMENT

This is either congenital or acquired; the coloring-matter may fail either over the whole skin or on single places alone. To the congenital general lack of pigment we give the name of *albinismus universalis*. In this, the skin, and shaft and bulb of the hair, are affected. The skin appears milk-white; the hairs are either white or yellowish, and the eyes appear red. This general absence of pigment is seen both in Europeans and negroes (*albinos*).

Partial congenital deficiency of pigment (*albinismus partialis seu leucopathia*) is more frequently seen in negroes, while it is relatively rare in the Caucasian race; the hairs on the white spots are also white, the patients presenting a mottled appearance, like some animals.

Acquired insufficiency of pigment (*chloasma album, achroma, vitiligo, leucopathia acquisita*) occurs both in European and the black races; round spots, of a milky-white aspect, are first observed in the genitals and extremities, and may extend even on to the face. Unfortunately, we do not know the cause of this loss of pigment in every case; sometimes it is induced by pressure, sometimes by ulceration, etc. Partial discolorations are seen principally after very enervating diseases, as typhus. In negroes the discoloration is, as may be conceived,

more striking, so that a true dappling results (*pied-negro*, *nègres pies*, *nègres mouchètes*).

Albinismus partialis is always in white spots, which are not elevated above the level of the surrounding skin. They are small and irregular, or they may be extended over large tracts. The white color may also present different shades; it may be shining, a snow, milk, or bluish white, or it may be without lustre; the organs of generation, the scalp, beard, areolæ of the breast, and the back of the hands and fingers, are principally affected, and the patches are almost always symmetrical. Opinions vary somewhat as to the hereditary character of the disease, but there are cases in which albinismus partialis has been continued through several generations; these patients are, for the most part, otherwise sick and reduced.

The achromatous places generally remain unaltered during the whole of life; but, in some cases, they extend in breadth, and new spots also appear. As a rule, the hairs on the affected parts change color, and become white; sometimes they retain their normal hue on the decolorized spots; while, on the other hand, white hairs may appear on parts retaining their natural complexion, which is regarded as an *albinismus partialis of the hairs*, and is described under various names (*leucosis*, *canities*). We have another pigment anomaly in negroes, which BEIGEL calls *semi-albinismus*, that is, diminution of color in the skin, which holds a middle position between the natural black and white. Semi-albinismus, in a manner, bears the same relations to the intensity of discoloration as partial albinismus does to the extent of the same. Albinismus totalis and partialis affect both negroes and Europeans; semi-albinismus is found in negroes alone.

CLASS VIII.

NEUROSES.

THE nervous disorders of the skin are: 1. Disturbances of sensibility—and, of these, a. Anæsthesia; b. Hyperæsthesia; 2. Motor disturbances; 3. Angio-neuroses.

1. SENSOR DISTURBANCES.

The papillæ furnish the sensation of touch, and, after their destruction, the sensibility to changes of temperature, pressure, and relations of distance, ceases.*

a. ANÆSTHESIA.

The causes of anæsthesia lie either in the brain, in the course of the nerves, or in their peripheral endings. Opium, ether, chloroform, and chloral, for example, produce anæsthesia, through their action on the brain. To the anæsthesiæ of the second class belong, for instance, those in the course of elephantiasis Græcorum; and to the anæsthesiæ of the third class

* The following is taken from WEBER's experiments on a deep cutaneous ulcer (*Archiv für physiologische Heilkunde*, 1855). The muscles of the arm were laid bare after the destruction of the skin and faciæ, and WEBER observed that the sensibility to warmth resided only in the skin and certain portions of the mucous membranes. The muscles were less sensitive than the skin. Touch and pressure were often not felt at all, and a temperature of between 0° to 40° C. (32° to 104° Fahr.) was not distinguishable. Two days thereafter abundant granulations appeared, but — 10° to +. 19° C. (14° to 66.2° Fahr.) were not felt; quite as little the pressure of a weight of a quarter of a pound. The pressure was required to be painful in order to be perceived. Two points, touching the bare muscles at the same time longitudinally, were felt as one impression, even when they were removed ten centimetres from each other (i. e., nearly four inches).

those caused by burns, injuries, the action of caustics, and local anæsthetics.

b. HYPERÆSTHESIA.

First of all comes the feeling of itching, *pruritus* ; this sensation accompanies many diseases, as eczema, scabies, etc. As a general rule, only those skin-diseases itch in which the papillary layer is irritated ; while wounds and ulcers, which extend deep into the subcutaneous tissue, are only painful. The pruritus does not commence until the granulations begin to be covered with epidermal cells (to skin over, to cicatrize). In prurigo, which is explained, by some writers, as a nerve-affection, by others as a local inflammatory process, the pruritus is very intense only when new papules are forming, and ceases with their destruction. In many dyscrasic diseases, as syphilis, the exanthemata, and lichen scrofulosorum, there is no itching, while nettle and the epizoa occasion it as soon as they come in contact with the skin. We see, therefore, that true dyscrasic diseases, which come from the blood, cause no itching, while ever so slight an irritation may be accompanied by the severest pruritus ; and that, therefore, this state, in most cases, is caused by some local process. HEBRA, in particular, first insisted on this fact.

In distinction from prurigo, which is always associated with papular development, we have a *pruritus cutaneus localis*, and *universalis*, as a special kind of cutaneous irritation, which is often connected with physiological changes in the uterus. Thus, women frequently have an intense itching over the whole surface, which continues uninterruptedly during the whole period of their pregnancy ; morbid alterations in the uterus, anomalies of menstruation, likewise Bright's disease, hepatitis, icterus, and granular liver, may produce the same ; itching is also a frequent accompaniment of the senile process. Pruritus cutaneus occurs, many times, in young girls with irregularities in the catamenia ; in these cases, the extensor surfaces of the extremities itch violently, and may be scratched till they bleed, and the places become covered with brownish-red crusts. The skin of such persons resembles that lacerated on account of bed-bugs.

Pruritus genitalium is more frequent in women than in men, especially in amenorrhœic, sterile females, and those at about the time of change of life; it is often an attendant on disease of the ovaries. The itching affects either the clitoris, the labia majora or minora, or the vagina. On these parts it is severe, and is accompanied by voluptuous feelings; the disease may last months or years. From the consequent friction, which may even amount to masturbation, we have at first excoriations, and afterward a chronic infiltrated eczema and leucorrhœa. It is asserted that the presence of an infusorial parasite—the *trichomoma vaginalis*—is the cause of pruritus genitalium, but this is not yet proved.

Pruritus ani, seen especially in corpulent persons, is a constant result of hæmorrhoidal tumors and intestinal worms (*ascaris*, *oxyuris*), but generally comes from eczema intertrigo.

Pruritus senilis is an affection of old age; the itching is often very severe, without the appearance of any other alterations on the skin, except those resulting from scratching. The causes of this disease lie in the above-described senile retrograde metamorphoses (page 302).

Unfortunately, we find but few anatomical changes in the nerves, either as causes or effects of skin-diseases. LANGERHANS has lately (VIRCHOW'S *Archiv*, 45 Bd., N. 413) recorded some observations as to the relation of the sensation-corpuscles in affections of the central nerve-system and the skin, but their result is negative. He found a finely-granular disintegration of the corpuscle in diffuse phlegmonous gangræna senilis, and a yellow discoloration in icterus. MEISSNER discovered fatty degeneration of the sensation-corpuscles in consequence of nerve-paresis.

2. MOTOR DISTURBANCES.

Here belongs the *cutis anserina*, a condition of the skin in which small papules of the size of a hemp-seed appear, caused by contraction of the muscular fibres running to the base of the hair-follicle, and in the corium, whereby the hair is erected and the follicle protrudes (*see* author's treatise, *Ueber Muskeln der Haut*, *Sitzungsber. der kais. Akad.*, 1868). These papules may be also produced by the electrical current, during the chill of intermittent fever, and by the direct action of cold upon the skin. *Cutis anserina* is therefore no disease.

3. *ANGIO-NEUROSES.*

To this class belong the neuroses following paralysis, in which the nutrition of the affected portion is retarded, the part withers, the hairs and nails drop off, or whole joints are lost (*see Elephantiasis Græcorum*).

The connection between a number of skin-diseases and the nervous system has been already indicated in the foregoing chapters (*urticaria, herpes, albinismus, nigrismus, alopecia, etc.*). Lately, EULENBERG and LANDOIS (*Wiener medic. Wochenschr.*, 1867-'68) have made valuable communications concerning vaso-motor neuroses (*angio-neuroses*), which we here give in abstract. These investigators divide angio-neuroses into those coming from *traumatic* and those from *organic* affection of the nerve trunk. When, namely, the body of the nerve is wounded or divided (inasmuch as the larger nerve-trunks of the extremities contain both sensitive, motor, and vaso-motor filaments), we have, besides paralysis and anæsthesia, a dilatation of the affluent vessels, an elevation of temperature, and in other cases a diminution of temperature, which may even proceed as far as a gangrenous sloughing of the skin, especially when the injury has existed long. Atrophy of the affected part may also occur. There is no doubt but that a large proportion of cutaneous diseases depend upon disorders of the vaso-motor nerves, which cause certain derangements of the circulation in the arteries, veins, and cutaneous glands. Anæmia and hyperæmia of the skin happen from vaso-motor irregularities, some from the brain, some from the spinal cord, or from the action of cold, or the electric current; anæmia especially follows cramp and contraction of the muscles.

Anomalies of secretion of the cutaneous glands may also possibly be produced by the vascular nerves, as also the so-called sweating of blood, and chromatogenous affections; it may be that the poison of scarlatina, measles, etc., first affects the vaso-motor nerves, causing the fever and other symptoms which manifest themselves on the surface by the peculiar exanthem (?).

Acne rosacea, according to LANDOIS and EULENBERG, is only a vaso-motor neurosis of the ethmoidal nerve; of the same nature are the eruptions caused by iodine, bromine, copaiba, cubebs, cod-liver oil, quinine, and digitalis, as also that in malaria, for in the latter we sometimes have acne,

purpura, and furuncle; sometimes also erythema, erysipelas, and urticaria. With these belong, moreover, circumscribed local anæsthesiæ, in which the skin becomes purple on well-defined patches, from a dilatation of the capillaries.

Herpes zoster serves well as a type of the angio-neuroses. As we have already seen, BÄRENSPRUNG considers the origin of zoster to be an inflammation of the sympathetic fibres of the small spinal ganglion. According to LANDOIS and EULENBERG, it originates in the vaso-motor nerves. The supply of blood is increased, the small arteries are distended, and as a consequence there are serous exudation and the formation of vesicles (see *Herpes Zoster*).

Urticaria depends also on a circumscribed vaso-motor affection, which may originate from very different portions of the organism. The same is true of *lepra anæsthetica*.

Treatment.—To cure the itching, we must first remove the cause, which can be done in very many skin-diseases, as eczema, scabies, urticaria, etc. In cases, however, where this is not possible, we must use certain remedies symptomatically. Of these *cold water* comes first, either in the form of baths, fomentations, or douches. A second remedy for itching, which the patient himself involuntarily makes use of, is scratching, and the sufferer will often bear severe pain with patience sooner than forego the relief from scratching, which seems to operate by overcoming the circulatory disturbance (HEBRA); the itching is likewise frequently suspended by pressure and friction.

In girls who menstruate poorly, aloes and iron should be administered, with the frequent use of cold douches. In pruritus attending chronic metritis, or disease of the ovaries, when it does not yield readily, we may afford relief by cold injections, tampons soaked in solutions of alum, tannin, or sesquichloride of iron, or by suppositories of butter of cocoa with opium or belladonna. Another method is to employ vapor-baths, with hyoseyamus. If the attacks recur typically, quinine either lightens them or causes them to cease completely; borax and aconitine are also sometimes used with success, the former in a mixture as follows:

R. Boracis, ℥j.
 Vini colchici, ℥j.
 Decoct. papav., ℥vj. M.

Many other remedies have been recommended by various authors in cutaneous itching, as concentrated acetic acid, alcohol, Cologne-water, etc., which may be successfully employed in some cases.

[I have already emphasized (p. 250) the value of clearly differentiating *prurigo* from *pruritus*, which latter is not a disease proper, but a *state of itching* dependent on many different causes. This distinction is not observed by the English or French writers, but I believe the American school accepts HEBRA's position.

We must never forget the possible existence of fleas or bed-bugs in cases of *pruritus*, even in the best circles, nor must we be led away, by the patient's complaints of the itching, from a careful consideration of the cause.

There are several local manifestations of *pruritus* described besides those mentioned in the text, but they are of no very especial significance—they are:

Pruritus nasi, which is generally accepted as a sign of "worms" in children; it may arise from other intestinal irritation; it comes also from irritation of the nose itself by picking. A little oxide-of-zinc ointment, with camphor, is the best local application.

Pruritus preputii will commonly be found to be associated with abnormal secretion of sebum around the glans. Cleanliness, and the interposition of a piece of lint alone, or dusted with zinc and calomel, will remove it.

Pruritus pubis is only the itching caused by the presence of pediculi pubis, and some mercurial ointment will remove at once the cause and effect. TILBURY FOX dusts portions affected with pediculi with powdered oxide of zinc and white precipitate, equal parts.

Pruritus urethræ is connected with disease of the bladder—often stone. Soothing injections may be used.

The following is a good application in *pruritus ani* or *podicis*, especially when dependent on piles: \mathcal{R} . Pulv. opii, plumbi acetatis, āā , \mathfrak{Dj} , ung. stramonii, \mathfrak{zj} . M. Ft. ung., to be applied after a cold hip-bath. Sometimes simple mercurial ointment will effect a cure. WILSON thinks the pyroligneous oil of juniper about the best antipruritic remedy—pure or diluted.—L. D. B.]

CLASS IX.

PARASITIC DISEASES.

THE organisms which draw their nourishment parasitically from the human skin, for a longer or shorter period, are either *animal* or *vegetable*.

A. ANIMAL PARASITIC DISEASES OF THE SKIN.

Syn. *Dermatozoic, Epizoic, Ectozoic Affections*.—L. D. B.

The animal parasites which live in the skin, that is, spend their whole existence on or within it, are, the *acarus scabei* or *itch-mite* (*Krätzmilbe*), and the *acarus folliculorum* or *steatozoon folliculorum*, the mite of the sebaceous glands. Other insects only pass some stages of their development on the cutaneous envelope, as the *sand-flea* or *pulex penetrans*, and the *filaria medineensis*. Some infest the skin but transiently to draw their nourishment from it, as the *louse*, the *common flea*, the *bed-bug*, and the *tick*.—We will begin with the parasite by far most interesting to the dermatologist, the *acarus scabei*, which is the sole cause of a very extensive disease, the *itch*, or *scabies*.

1. SCABIES.

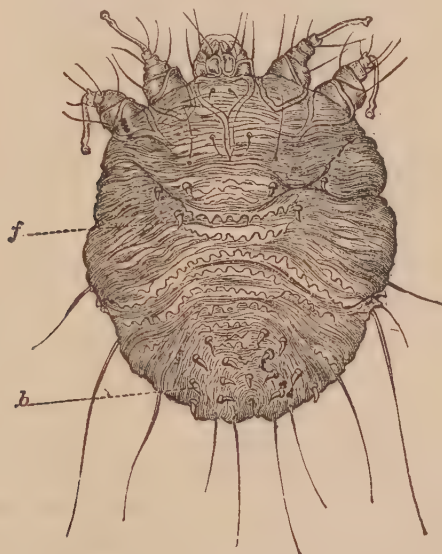
Syn. *Krätze, Gale, Itch*.—L. D. B.

Scabies is an artificial eczema, occasioned on the one hand by the irritation of the *acarus scabei* (*sarcoptes hominis*), and on the other by the scratching nail. The letter written by BUONOMO to REDI, based on an oral communication from CESTONI, as also the labors of BOURGUIGNON, GERLACH, EICHSTEDT, HEBRA, KÜCHENMEISTER, BERGH, GUDDEN, FÜSTENBERG, and

others, have made the parasitic nature of this affection abundantly clear.

Anatomy of the Itch-mite.—The *female acarus* is visible to the naked eye as a small, roundish body, one-third of a millimetre in diameter, resembling a tortoise; its actual measurement is on the average one-fifth to one-fourth of a line in length, and one-seventh to one-sixth in breadth.

FIG. 42.



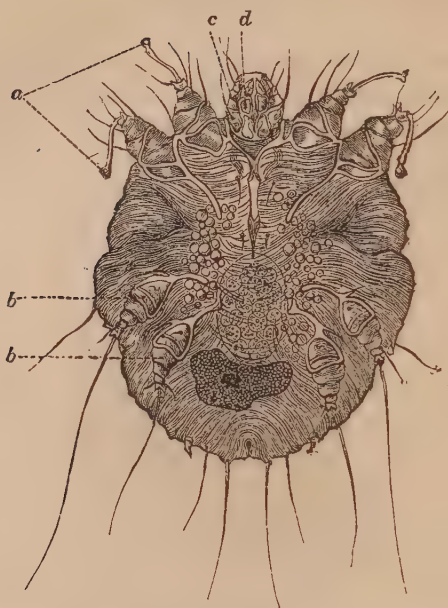
Female acarus, showing the back.—*f*, Conical projections.

With the aid of a microscope we see many lines running more or less parallel on its back and breast, and on the former several conical prominences (Fig. 42), and numerous fine hairs. On each side of the head are two fore-feet provided with suckers (*a*, Fig. 43), also two feet on each side behind, *b*, without suckers, and with long bristles. (The plates are from HEBRA and ELFINGER's "Atlas of Skin-diseases.")

The head consists of two scissors-shaped, three-jointed mandibles (*c*), and outside of these are two three-jointed palpi, which latter bear bristles.

Behind the head we have the œsophagus (?), the stomach

FIG. 43.



Female acarid, presenting its ventral surface.—*a*, Fore-feet, provided with pedicled suckers; *b*, Hind-feet, with long hairs.

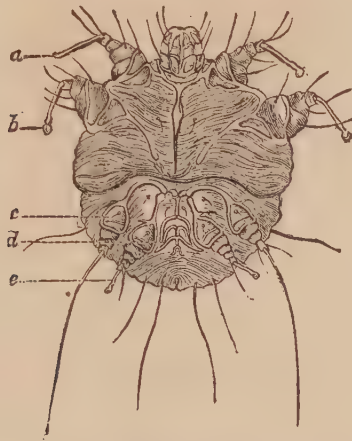
and intestines, which open posteriorly, and are filled with the excrementa. The ovary is also clearly seen in the impregnated acarid, with its finely vesicular or granular contents, the eggs. Respiratory organs seem to be wanting entirely, and the acari can live for a long time in places excluded from the air, in the skin, also in petroleum and oil (BURCHARD, *Archiv für Derm.*).

The *male acarid* (Fig. 44) is much smaller; opposite to the head, between the two hind-feet, we find a projection, the penis (?). The female insects bore long canals in the skin, the male remain in short burrows or in vesicles.

To study the course of scabies, we take an impregnated female acarid and place it upon the skin of a healthy person. It first creeps into a furrow of the skin, then attaches itself firmly and penetrates the epidermis by means of its jaws, until it reaches the rete mucosum, where it finds its nourishment. The mite (Fig. 45) continues to advance, and lays one egg after another, so that its return passage is blocked up with eggs.

Those first laid, in which we find even young acari, are covered with but a thin layer of epidermis; those deposited later, with a thicker. Fourteen days are necessary to develop the young egg into an acarus. The number of eggs which one insect lays is great, forty to fifty, according to some authors, although not more than ten to fifteen are seen as a rule in a furrow; she

FIG. 44.



Male acarus, abdomen presented.—*a* and *b*, as in Fig. 43; *c*, Five-jointed legs, with bristles; *d*, Penis; *e*, Extremity, without hairs.

continues to lay them until she dies. This space, which the female acarus makes during her passage, is known as the *cuniculus* (*Milbengang, sillon, furrow*). It is visible to the naked eye as a sharply-defined spiral or circular line, varying in length according to the number of eggs deposited, in which the eggs and also the acarus can be discerned as small points. If we examine a newly-laid egg with the microscope, we find its contents finely granular. Within a few days this organizes and becomes an acarus, which, on the fourteenth day, moves within the shell, breaks through, traverses the furrow, and appears on the surface. The young acari run actively over the surface, quickly bore into the integument, and occasion severe itching. The existence of air-spaces in the upper wall of the furrow, as observed by some authors, is denied by others. The young

acarus (Fig. 46) has six extremities, shows no traces of sexual apparatus, and casts its slough three times before maturity; for its cutaneous envelope surrounds it like a shell. After shedding its covering, the insect lies stiff and immovable in its furrow. At the first growth of skin it acquires eight extremities. The dermal envelopes are regularly ruptured, and remain in the furrow. The females live, on the average, from three to four months.

FIG. 45.



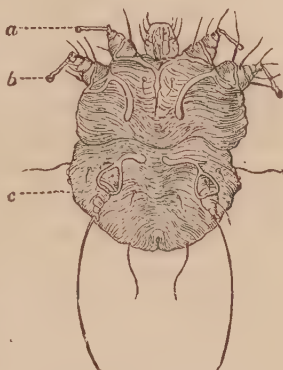
Acarus, depositing eggs (*Ersected cuniculus*, Milbengang).—The eggs lying next to the insect consist partly of a homogeneous, partly of a granular mass; in those distant from the insect, embryos are already developed, and at the entrance of the furrow a moving acarus is seen.

Around and beneath the furrow we find papules, vesicles, and pustules, in proportion to the duration of the disease, and the susceptibility of the skin. Very many furrows are elevated by the exudation, and we frequently find them running over papules, vesicles, and pustules (*impetigo*, *ecthyma*). From the irritation caused by the acarus on the papillary layer, and the

young acarus on the surface, we have the feeling of itching, in consequence of which the parts are scratched, the furrows laid bare, and the acari set free; the eruption is destroyed, but excoriations are formed, which itch sympathetically, although the cuniculi are empty.

With reference to the method in which infection takes place, BURCHARD says that the scabies-patient does not scratch principally where the furrows are, but where he feels the sensation of itching, and parts that he can conveniently reach with the finger-nails. Nowhere do we find, on the average, more furrows than on the hands, and yet these are far less often scratched than the forearm and thigh. The acari generally reach the surface before the last renewal of their skin, and then creep from one person to another. Infection, therefore, happens less from impregnated acari than from those living outside the furrows.

FIG. 46.



Young Acarus. — *a*, *b*, Extremities with suckers; *c*, Pair of extremities, with hairs.

The above-described phenomena increase in extent and intensity with the duration of the disease. Therefore, HEBRA'S assertion, that scabies is nothing more than an artificial eczema, receives abundant confirmation. This view, nevertheless, has still many doubters, and, although fortunately the belief in a metastasis of scabies no longer exists, yet there are some authors who, while they look upon the acarus as the cause of scabies, still assert that the insect brings a poison to the blood, something like that of syphilis, which manifests itself by the secondary changes found on the skin, as pustules, vesicles, etc.

Opposed to this theory stand the following :

1. Inoculations with crushed acari, and with the contents of vesicles and pustules, have been made, and have never yet produced pustules on the infected spot.

2. When scabies makes its appearance on a paralyzed person whose papillary layer reacts but little under the irritation of the acarus, the patients do not scratch, and we find everywhere the furrows and one or several vesicles around them, but never the state presented by scabies on the healthy person.

3. When insane persons who are kept in the strait-jacket are attacked, the excoriations likewise are absent.

4. Would it be hardly possible, by solely external means, in two to three days to cause to disappear, completely and forever, a disease which had so deeply infected the blood?

The regions where the acari are principally found are, the hands, vicinity of the elbows, folds of the axillæ, nipples, scrotum, penis, buttocks, and feet, especially above the malleolus internus, and the sole. The insects may attack any portion of the skin, especially such parts as are long accustomed to pressure; thus, in women, where the skirts are attached, or where a bodice fits tightly, and, in men, where a girdle binds. In those accustomed to carry weights on their backs, a great quantity of acari will be found in those places where there has been repeated pressure. In infants, the larger number of cuniculi are found on the breast, abdomen, and extremities, also on the face, and even the scalp, because all these parts come in contact with the nurse and may be infected from her.

The itching comes on mostly when the body is warm, because the acari move more actively under the influence of heat. The sensitiveness of the parasite to cold, also explains why certain localities of the skin, especially the face, are free from them, while the hands, although they are in the air during the day, yet, during the night, remain near the body, are, therefore, warm and readily visited by them (GUDDEN).

We confess that we are not able, as yet, to explain why the acari infest certain regions of the skin. In general, they attack by preference such parts as are covered with a delicate epidermis, as the fingers, the inner surface of the upper extremity, the axillæ, penis, scrotum, etc. The thinner the epidermis is, the quicker the exudation is formed, and the more readily a papule develops. The more the acarus finds its nourishment in the superficial layers of the skin, the fewer papules are there; the deeper it burrows, the more are produced.

The *Norwegian scabies* is a peculiar form. Thick depositions of epidermis are formed on the palm of the hand and sole of the feet, and the nails also become affected and drop off; layers of crusts are likewise formed on the face, scalp, and ears

(impetigo), which, with the scales, contain large quantities of acari and eggs (BOECK, HEBRA).

Diagnosis.—The phenomena described are quite sufficient to make the diagnosis of scabies. Nevertheless, these marks may be essentially modified by the duration of the disease, or from the operation of other influences, as friction with ointments, or from a combination with other diseases. The furrows are usually most clearly perceptible on the hands and penis; on the former they are prominent by their color and their cord-like appearance. In the loose epidermis, they imbibe coloring-matter very rapidly, and, therefore, may be variously colored blue, black, red, etc., according to the occupation of the individual. In infants this sign fails, the furrow not being prominent by its color, and, when it has lasted a few days, it very quickly develops a pustule, and as such is wholly unrecognizable. The absence of cuniculi, therefore, does not necessitate the absence of the disease. Far more important to the making of a right diagnosis are the secondary eruptions (papules, vesicles, pustules, and crusts), and that by the manner of their distribution over the skin. Thus the most of them are found on the fingers, the inner surface of the wrist, in the axillary folds, and especially on the abdomen, and on the buttocks of those who lead a sedentary life. When their arrangement has been studied for a few times, it will not be difficult to arrive at a correct diagnosis. After scabies has lasted long, great changes occur on the lower extremities, pustules are formed (impetigo), and consequent swelling of the crural and inguinal glands.

In such cases the disease has much resemblance to prurigo, but can be readily distinguished from it by the condition of the skin, which, especially on the lower extremities, is greatly infiltrated in the latter disease.

Prognosis.—The prognosis is favorable in this affection, as it disappears after a few days' appropriate treatment, however severe it may have been. Relapses do not often occur after good management; of course a new infection may happen, and the disease again be produced. The clothing formerly worn may cause a recurrence, likewise the linen, which may not have been thoroughly washed, or the bedclothes, which may contain crusts harboring yet living acari; or, again, a fresh

contact of the cured person with one having scabies may renew the disease.

Treatment.—When about to treat a patient with scabies, in our choice of remedies we must consider the following :

1. Are we to treat a child or an adult ?
2. A male or female ?
3. Are there many or few secondary effects present, as pustules, etc. ?
4. Is the patient to be treated in the hospital or at home ?

We will first present the plans followed by us, and afterward speak of other methods. Among the great mass of remedies used in scabies, those are the best which not only destroy the acari and their eggs, but at the same time cause the secondary eruptions to disappear.* In scabies occurring in children, we use :

℞. Sulph. flor. ℥j ; ung. simpl. ℥j. M. ; or, ℞. sulph. flor., balsam. peruv., āā, ℥ij ; ung. simpl. ℥ij. M. ℞. Styrcis liquid., flor. sulph., cret. alb., āā, ℥ss ; sapon. virid., axung. porci, āā, ℥j. M. S. for two frictions (Dr. WEINBERG's ointment). This is especially suited for the out-door treatment of adults.

The surface of the body should be well rubbed with the ointment morning and evening for three days, and, when many furrows are present on the hands, they must be bandaged with it, or gloves worn. If many secondary eruptions exist, the following salve should be applied four times within forty-eight hours : ℞. Ol. fagi (or olei rusei), florum sulph., āā, ℥ss ; saponis virid., ung. simpl., āā, ℥j. M. A bath should not be taken before the sixth day. It is well to envelop children in woollen garments in immediate contact with the skin.

Scabies of adult men (women have, as a rule, too tender a skin) are treated in HEBRA's wards with the following remedies :

Solutio Vlemingke.—℞. Sulph. venal. ℔ij ; calcis viv. ℔j ; aq. font. ℔xx ; coque ad remanent ℔xij, dein filtra. This fluid is useful in scabies with few pustules and crusts : the patients first rub the skin well with ordinary soap in a bath : they then rub the most commonly frequented parts especially with the solution, while on the rest of the body it is simply applied without friction ; the applications must not be too severe, or

* No use is now made of remedies in gaseous form, as sulphur-vapor baths.

the corium will be laid bare. Two such applications of Vlemingkx solution will suffice to cure the itch. If, however, there is much secondary eruption, WILKINSON's salve, as modified by HEBRA, is better suited:

℞. Flor. sulph.,
 Ol. fagi, āā, ℥ vj.
 Cretæ alb., ℥ iv.
 Saponis viridis,
 Axung. porci, āā, ℔j.
 M. Ft. unguent.

The patients are rubbed with this ointment four times within forty-eight hours; meanwhile they lie between woollen blankets, or wear a woollen suit next the skin, or are dusted with starch (WERTHEIM), and treated as out-door patients. The salve dries and comes off in large scales. A bath should not be taken sooner than a week.

The ointment of BOURGUIGNON can be recommended to those in better condition of life: ℞. Olei lavandulæ, olei menthæ, ol. carophylli, ol. cinnamomi, āā, ℥ xx; gum. tragacanth., 3j; potass. carbon., 3j; flor. sulph., 3ij; glycerine, 3vj. M.

The following methods of cure are also worthy of mention:

℞. Flor. sulph., 3ij; potass. subcarbon., 3j; ung. simpl., 3j. M. (HELMERICH.)

℞. Flor. sulph., 3j; ammon. muriat., 3ij; axung. 3ij (ALIBERT).

℞. Ol. amygdal. dulc., 3j; potassii sulphureti, j 3; camphoræ trit., ʒj. M. Ft. liniment. (VALENTIN).

℞. Hydrarg. bichlo. corrosiv., ʒj; aq. destill., ℔j. M. For lotion and dressing to hands in scabies pustulosa.

℞. Potass. carbonat., potass. nitrat., āā, 3ij; spirit. frument., aq. font., āā, ℔. ss. (*spiritus* LEONARDI).

℞. Sulphuris loti, 3ij; ol. nuc. cocoa, 3j; ol. rosar., gtt. ij; sapon. virid., 3ij. M. ℞. Pulv. rad. hellebor. alb. 3j; potass. nitrat., 3ss; flor. sulph., sapon. domest., axung. porc., āā, 3vj. M. Ft. ung. (VEZIN).

HARDY's method: The patients with the itch take a warm bath, rub themselves well with black soap, and after the bath with an ointment, consisting of two parts of sulphur, one of carbonate of soda, and eight of lard.

BURCHARD recommends the following method: Morning and

evening the skin is washed with sapon. viridis, a bath taken, the patient smeared with balsam Peru four or five times in the twenty-four hours, and then rubbed off.

DECAISNE advises petroleum, three frictions with which, in the twenty-four hours, will suffice to cure scabies. The experiments which we made with this remedy have not proved themselves especially successful.

Styrax is also esteemed, on account of the rapidity of its action and its cheapness (a cure costing only about three cents). The eczema, however, is not removed by it as quickly as by the other remedies mentioned.

[ANDERSON gives some rules for the treatment of scabies, which he furnished, on a printed card, to each of his dispensary patients with this disease. They are simple and practical, and I copy them, thinking they may be of service to others. They are:

"1. Scrub the *whole* of your body (except the head) as firmly as possible, without hurting yourself, with black soap and water.

"2. Sit in a hot bath for twenty minutes, or, if you cannot get a bath, wash yourself with hot water thoroughly.

"3. Rub some of the ointment firmly into the skin of the whole body (except the head) for twenty minutes. Let the ointment remain on the body all night.

"Repeat these processes every night for three nights.

"Besides the above, put all your washing-clothes into boiling water, and iron all your other clothes *thoroughly* with a hot iron."

His favorite ointment is:

| | | |
|----------------------|------|----------------------|
| R. Styracis liquidi, | ℥j. | |
| Adipis, | ℥ij. | M. Melt, and strain. |

TILBURY FOX uses the following ointment almost exclusively:

| | |
|-----------------------|---------------------|
| R. Sulphur, | 3 ss. |
| Hydrargyri ammoniati, | gr. iv. |
| Creasoti, | ℥ iv. |
| Olei anthemidis, | ℥ x. |
| Adipis, | ℥j. M. ft. unguent. |

This is rubbed in night and morning; the same shirt kept on till the third day, when it is changed, and a warm bath given; the ointment to be freely rubbed into the wrists, and interdigits especially.

It is strange, indeed, how one with the experience of Mr. HUNT can assert, as he does, "The real cause of scabies is *dirt*. Dirt originates it, sustains it, propagates it. . . . The acarus is an accidental result of dirt." Contrariwise, I would assert, on the authority of the larger part of the investigating professional world, "The real cause of scabies is the *itch*-

insect, acarus scabiei. The parasite originates it, sustains it, propagates it. Remove this, and the disease, scabies, is at an end, although the eczema, the result either of the disease or the treatment, may remain for some time, and require further treatment.—L. D. B.]

2. MALIS.

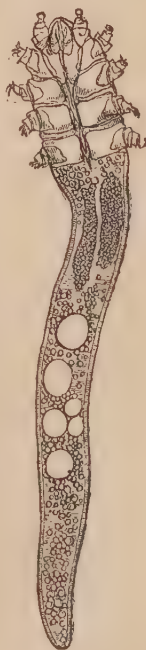
[I adopt this title from Mr. WILSON as a generic term, to signify the state of the skin when infested or attacked by the following *minor parasites* mentioned in the text.—L. D. B.]

1. *Acarus folliculorum*, *Haarsackmilbe*, NEUMANN; *Entozoon folliculorum*, *Steatozoon folliculorum*, *Demodex folliculorum*.—L. D. B. (Fig. 47).—This parasite appears in the hair-follicles and sebaceous glands when in their normal state. It has a length of from 0.085''' to 0.125''', and a breadth of about 0.020'''. The head has two double-jointed palpi on its sides, and a cylindrical proboscis, upon which is a three-cornered organ, made of two fine extremities, or bristles. The head passes directly into the thorax, which constitutes perhaps one-quarter of the whole length of the body. On each side of the thorax there are four very short conical feet, each of which consists of three members, and has three fine claws on its extremity.

The posterior part of the body exceeds the anterior in length by about three times, and has constrictions. Some observers are said to have recognized an œsophagus, intestines, and liver; in some instances the rear portion is smaller than the anterior. Finally, there is another species described, in which there are but three pairs of feet.

These mites are found in the normal skin; among ten men, one or two will have them, especially those with a greasy skin. They are generally on the skin of the face, nose, ears, lips, and external auditory canal, also behind the ears. There are often from two to four, seldom more of them, in one follicle; as many as ten to fifteen have been found; they

FIG. 47.



Acarus folliculorum.

are usually alive. They have no injurious effect upon the skin. To obtain them in numbers, we take a blunt-edged instrument, as a tongue-spatula, stretch the skin tightly over the forehead, and, pressing the spatula firmly on the skin, slowly draw it along; the expressed masses are mixed with a little oil, and placed under a microscope.

2. *Guinea-worm* (*Filaria medinensis*).—This buries itself in the human skin.

3. *The Common Flea* (*Pulex irritans*).—Its bite produces hæmorrhages, surrounded by a reddish areola, or papules and wheals, when the skin is irritated.

4. *The Sand-flea*, *pulex penetrans* (*rhynchoprion penetrans*, *chiggre*, *chigoe*), is met with in Africa, Paraguay, Mexico, Virginia, on the Cordilleras, and in Bogota and Quito, six thousand feet above the sea; it is found in the neighborhood of human dwellings, and bores into the skin, causing inflammation. The impregnated females alone are parasitic. The lymphatic glands swell; in consequence suppuration ensues, with the formation of ulcers; they are most frequent on the knuckles, between the toes, and beneath the nails (KARSTEN).

5. *The Wood-tick* (*ixodes ricinus*), an insect living in pine-wood, penetrates the human skin, and gives rise to tumors the size of a pea.

6. *The Bed-bug* (*cimex lectularius*) comes probably from the East Indies, where it was known to those of olden times. Its bite produces red papules, or wheals, on the skin, which, becoming scratched, leave crusts the size of a pin's-head (excoriations), which have a similarity to those from pruritus cutaneus.

7. *Gnat, Midge*, *Culex pipiens*.—This produces eruptions of urticaria.

8. *The Harvest-bug* (*leptus autumnalis*) is a small red insect, ordinarily living on corn and shrubbery, but which may penetrate the skin and occasion wheals. Workers in vineyards, in the autumn, principally suffer from this parasite. The *leptus autumnalis* is plainly identical with the arachnide, described by GRUBY (*Allg. Med. Zeitung*, 1863).

9. *The Tick* (*argas*), with short head and white, oval body, bores with its head into the skin, and causes great inflammation, with swelling of the neighboring lymphatic glands.

PHTHIRIASIS.

Syn. *Phthiriasis*, *Morbus pedicularis*, *Malis pediculi*, *Maladie pediculaire*, *Länsesucht*.
Disease due to the Presence of Pediculi, Lice.—L. D. B.

[I insert the above heading with the synonymes, as indicating the condition of body affected with the three forms of lice described below. The term is a good one, and much employed, and may be used to designate the itching produced by the three varieties of parasite: thus, *phthiriasis*, *inguinalis*, or *pubis*, *capitis*, and *corporis*; this is better than using the term *prurigo pedicularis*, as ANDERSON does, inasmuch as we have made *prurigo* a disease, *sui generis*, entirely distinct from any association with lice; there is no harm in applying the term *pruritus* to this affection.—L. D. B.]

1. *Crab-louse* (*phthirus inguinalis*, *pediculus pubis*) is found at the roots of the hairs of the mons veneris, scrotum, anus, abdomen, extremities, and also sometimes in the beard and eyelashes. It gives rise to a papular eczema, and consequent slight but prolonged itching.

2. *Head-louse* (*pediculus capitis*) is found exclusively on the hairs of the head; it attaches its eggs, or nits, to the hairs, and excites an intense eczema, which may even extend on to the neck and face, and is accompanied with great swelling of the lymphatic glands.

3. *Body-louse* (*pediculus vestimenti*, *pediculus corporis*) inhabits the clothing of uncleanly persons; the effects produced by it on the skin vary with the duration of their presence. If the patients have had them but a short time, we find only papules and superficial excoriations; when the disease has lasted longer, the alterations on the skin are more intense, and the excoriations greater, generally of a longish form; they may reach even into the corium, forming pustules, furuncles, and abscesses covered with crusts. These leave scars which, on their periphery, are darker colored, and in the centre lighter, than the normal skin. Abscesses are most frequent about the loins and on the shoulders, that is, on those places where the lice are retained in the folds of the shirt, and where the clothing presses. After long continuance of this affection, the skin is stained of a dark-brown or slate gray (*melasma*). This disease, described under the name of *phthiriasis*,* *lousiness*, is, there-

* *Phthiriasis*, *Lousiness*.—It was formerly believed that the lice inhabit the boils and abscesses of the skin, and were developed from the bad humors of the body, and that death was possible from this affection (Emperor Arnulf's death, and that of the

fore, a local process, the lice being only on the exterior of the skin, and not in the interior of the pustules, or abscesses, except as they gain entrance from without.

Treatment.—This consists, first of all, in the removal of the parasites; those which live in the skin itself (*pulex penetrans* and *ixodes*) must be extracted with the forceps and knife. The methods of removing the lice alone require special explanation.

In the case of *crab-louse*, the best application is the unguentum hydrargyri, of which but a portion, the size of a hazelnut, should be rubbed in at once, for fear of salivation. Petroleum, carbolic acid (one part to eight), or balsam of Peru, may be used; the latter should remain on over night. After the application of these remedies, lukewarm baths are necessary to remove the nits, and to prevent eczema. *Pediculi capitis* in men and children must be removed, together with their nits, by cutting the hair short; in women, where we wish to save the hair, we dust it with pulvis semin. sabadillæ, and have it repeatedly cleansed; *body-lice*, which live only in the clothing, and never on the skin, are removed with the clothing; this latter, among the poorer classes, must be disinfected; and the

Danish king, Snyo, from lice, see HUSEMANN, *deutsche Klinik*, p. 33, 1867). These views obtained during the last century, ALIBERT believing in the existence of the lousy distemper; DEVERGIE also affirmed that poor nourishment of the body might lead to the development of lice. Even FUCHS assumed a spontaneous lousiness, and asserted that cachectic persons had boils formed on them, within which, besides pus and ichor, there were lice.

GAULKE describes two cases where he has met with whole colonies of lice under the skin in boils and abscesses with thin epidermal covering, and explains that the louse enters the skin by penetrating it with his proboscis. HEBRA rightly denies these assertions, and we also have examined the greater part of those affected with *pediculi vestimentorum* in his wards during the last ten years, and have never seen a single case where the lice were contained in abscesses; on the other hand, the appearances on the skin are only the effect of scratching, and of the irritation, caused by the very rapid multiplication of lice, their bite producing wheals or papules. The scratching-nail soon destroys the papule, or the quaddel, and bloody excoriations result, which form dark-brown, round, or longish crusts. These excoriations occur in greatest numbers on the breast, back, between the shoulders, and on the loins. Besides them, we have furuncles and abscesses, caused by the irritation, and also swelling of the glands; the skin finally becomes darkly pigmented. These pigmentations either correspond to the excoriations, or are longish lines or furrows following the lacerating nail. The scars are also characteristic, whitish in their centre, and dark brown on the periphery.

best way is to place it in a closed chamber with an elevated temperature for a long time. The secondary effects of lice and other parasites are treated by the methods already sufficiently explained in the preceding chapters.

[Our author has not mentioned the *stavesacre*, the seeds of the *Delphinium staphisagria*, which is one of the most common and best remedies for lice. The strong tincture, infusion in water or vinegar, powdered seeds dusted on, or ointment made of finely-ground seeds (three parts to five of lard), are all effectual. It is very difficult, if not impossible, to obtain a fine powder of the seeds, and so SQUIRE employs an ointment of the oil, made by digesting two drachms of bruised seeds in an ounce of melted lard and straining while hot, which he prizes highly. Most English writers recommend an ointment of white precipitate (gr. xv to xxx, ad $\frac{3}{4}$ j) scented with lavender or the like. Bichloride-of-mercury lotion (gr. ij-iv, ad $\frac{3}{4}$ j) is a cleanly application for *pediculi pubis*. In dispensary practice, I am in the habit of prescribing for *pediculi of the head*, even when there is considerable eczema present, to keep the head saturated for twenty-four hours with common petroleum, and bound up in a cloth. The head is then washed with soap, and cod-liver oil continuously applied, until the eczema has disappeared. This I learned from HEBRA, and it is very effectual.—L. D. B.]

B. VEGETABLE PARASITIC DISEASES OF THE SKIN.

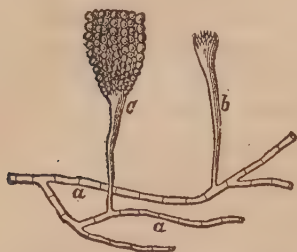
Syn. *Dermatophytic, Epiphytic Diseases*.—L. D. B.

A. GENERAL CONSIDERATIONS.

The great class of fungi is distinguished from the nearly-allied algæ and lichens by the simple structure of the former, their affinity for organic textures, and by the cell-membrane, which can be dyed blue by the addition of iodine, or iodine and sulphuric acid, or, in rare cases, by an iodized chloride of zinc. The fungi contain neither starch nor chlorophyl; they are remarkable for the large proportion of nitrogenous substances which they contain, and their thallus, the so-called mycelium (Fig. 47, *a*), consists of more or less loosely-formed, simple or jointed cellular threads, which grow in decaying organic substances, and there first show organs of fructification. Commonly, the mycelial threads—the vegetative organ of the fungus—form a loosely-interwoven mass, while in other cases there is a dense layer of cellular bodies, of various shapes, lying upon each other, which generally require some period of tran-

quillity for their further development. This mycelium is called sclerotium, or permanent mycelium, as seen in the ergot of rye (*secale cornutum*).

FIG. 47.



Aspergillus nigrescens (ROBIN).—*aa*, Mycelium; *b*, Hyphen, on whose summit is the head, with its sterigmata (pedicles); *a*, Head, from which the chains of conidia spring.

without any precedent impregnation, by a simple change of form of a vertical member of an articulation. These perpendicular branches of the mycelium which bear the conidia are called *hyphens* (Fig. 47, *b*). These erect, and sometimes also the creeping hyphens, support their conidia variously: on their

Fungi multiply both by the seeds contained in their fruit; and by a division of their vegetative tissue; that is, the mycelial threads, like the simple algæ; and, moreover, by a peculiar and varied form of tissue-cells or *conidia* (spores, Fig. 47, *c*).

There are a number of these conidia-bearing fungi embraced under the name *hyphomycetes* (mould-fungus), which, as has been intimat-

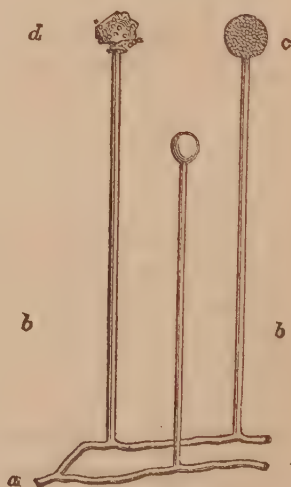
ed, are formed on erect branches,

FIG. 48.



Penicillium glaucum.—*a*, Mycelium; *b*, Hyphen; *d*, Macro-conidia; *c*, Chain of conidia.

FIG. 49.



Mucor mucedo.—*a*, Mycelium; *b*, Hyphen; *c*, Sporangium; *d*, Conidia.

apex (as in the penicilium, Fig. 48), in chains on their side (fusisporium, Fig. 51), in heads (mucor, Fig. 49), or else solitary. The conidia themselves have different forms; sometimes they are single cells, as in the penicilium (Fig. 48), and aspergillus; sometimes there are two or more divisions made by partitions, and they are then called chambered conidia, as in fusisporium and trichothecium (Figs. 52 and 65). Originally, these forms of conidia of the mould were all grouped as classes and species, although they are not properly species; for the conidia are not seeds, nor are they produced by any generic function; they rather signify for cryptogams what bulbs and leaf-germs are to the phanerogams.

Besides the propagation and growth of fungi from seeds and conidia, we sometimes find single articulations of the mycelium becoming rounded, and covered with a cell-membrane, generally thick; and these, like the conidia, have also the power of reproduction, while to the true seeds, the product of generic function, belongs the office of preserving the species. These growths are called *macroconidia* or *chlamydospores* (Fig. 48, *b*).

FIG. 50.



Puccinia graminis.—aa, Mycelium; bb, Conidia.

FIG. 51.



Cephalosporium.

Resembling the forms of conidia which have been introduced as hyphomycetes (mould-fungus), there is another variety bearing thick masses on the mycelia, and which are distinguished in general from moulds by their appearance in greater or smaller quantity beneath the epidermis of various living and dead plants or portions of plants. These are called *coniomycetes*, and are the cause of the destructive rust and smut on corn; they are the uredo and puccinia (Fig. 50).

If we place the mycelium, hyphen, or conidia of mould, in pure water, or water with the addition of sugar or salt, an important alteration goes on in its interior. The plasma, up to

the present time more or less clear, becomes cloudy (especially when the fluid does not agree with it) in a striking manner, and becomes granular; the granules multiply very considerably in a short time, at the expense of the rest of the cell-tissue; they increase in size, and are finally seen sprouting, in various forms, from the cell-wall which first enclosed them, but is now dead, in the form of the micrococcus, bacterium, yeast-plant, etc.; these depend upon the temperature, kind, and concentration of the fluid. The cells may even be made to produce mycelium when the medium in which they are placed is suitable.

FIG. 53.



Cladosporium.

FIG. 52.



Fusisporium.—a, Mycelium; b, Hyphen, branching above; c, Chambered conidia.

A knowledge of the following forms is so indispensable in the thorough study of mycology that I cannot well avoid giving them a brief notice; they are the organisms known as the micrococcus, bacterium, vibrio, spirillum, sarcina, leptothrix (mycothrix, HALLIER), mycoderma (cryptococcus), and arthrocooccus. They may be thus briefly characterized:

A. BACTERIAL FUNGI.

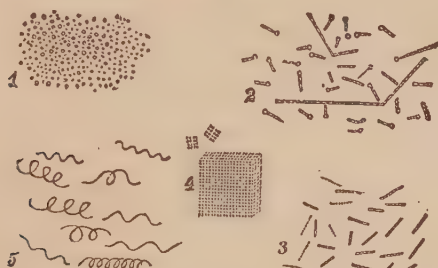
Members or cells free, solitary, or united in chains of extraordinarily small size.

1. Cells isolated and often immovable, or moniliform and movable. To this belong the following forms:

a. *Monas* or *micrococcus* (Fig. 54, 1).—Cells single, tranquil

or having a molecular movement, germinating freely; they are found in decaying animal and vegetable cells, and in decomposing fluids containing organic matter. They, together with those following, are thought by some observers to propagate and cause certain diseases. With these is to be ranked also the so-called *monas prodigiosa* (Hostienblut).

FIG. 54.



1, Micrococcus; 2, Bacteria, with a leptothrix thread; 3, Vibriones; 4, Sarcina; 5, Spirillum.

b. *Bacterium* (Fig. 54, 2).—Cells joined in longer or shorter series, which are often strikingly swollen at one or both ends, giving frequently a clavate appearance. These are very common, as are also the former, and are always undergoing molecular agitation, mostly of a pendulous character, with the large terminal cell directed upward when the fluid suffices. They are especially frequent in fermenting milk, cheese, etc. As soon as bacterium is placed in a fluid in which it is not completely nourished, the movements begin.

c. *Vibrio* (vibriones) resemble bacteria very closely; they are united in longer or shorter chains or stems, and are mostly of uniform size. They have an apparently voluntary movement in putrefying fluids.

d. *Spirillum* (Fig. 54, 5).—Cells arranged in lengths, symmetrical or spindle-shaped, which have a serpentine motion of great rapidity. They are, however, not found so frequently in decomposing fluids as the former organisms.

2. Cells associated in immovable quadrilateral (*maerismopædia*) or cubic forms (Fig. 53, 4). Here four cells are included in each parent-cell, and these in turn form cubes, combined in greater or less number.

a. *Sarcina*.—This is frequently found in the stomachs of men and animals; the component parts may, in some cases, be united in thread-like articulations, forming the *mæris mopædia ventriculî*.

b. *Leptothrix* (*Mycothrix*, IRZIGSOHN, Fig. 54, 2).—The cells form long, delicate concatenations, especially on the surface of stagnant and putrefying fluids, producing the so-called *cuticula*. *Leptothrix* must not be confounded with *leptomitus*. By the latter we understand very delicate, sterile, fungoid mycelium, much branched with long joints, floating in the fluid. All the above organisms, when in suitable fluid, can develop into :

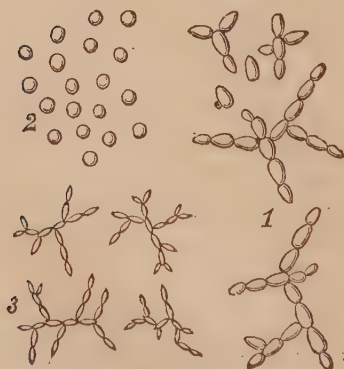
b. YEAST-LIKE FUNGI.

Cells a hundred times, or more, the size of the former, which multiply by sprouting, and have an arborescent vegetation.

Mycoderma (*Cryptococcus*, *Hormiscium*, *Saccharomyces*).—Roundish or oval cells, solitary or united in branched chains, which are sometimes flocculent, and afterward become mycelial; the articulations resemble each other; they always grow in fluids.

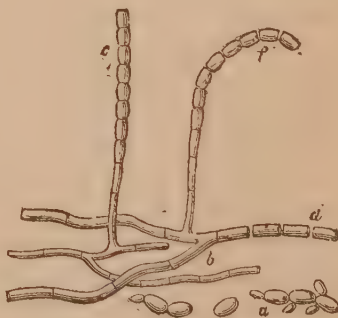
a. Yeast-plant (*mycoderma cerevisiæ*, *torula cerevisiæ*).—Of this there are two kinds; the lower form (Fig. 55, 2), which attends a lower grade of fermentation, with a temperature of not more than 10° C. (50° Fahr.); and the higher fungus (Fig. 55, 1) found with a temperature of over 50° Fahr., partly float-

FIG. 55.



1. Yeast of higher fermentation; 2. Yeast of lower fermentation; 3. Vinegar-plants.

FIG. 56.



Oidium lactis.—a, Disarticulated cells; b, Mycelium; c, Hyphen; d, Disjointed mycelium; e and f, Cells separating from the hyphen.

ing on the fluid, and consisting of branched chains of ovoid cells. b. Wine-plant (*mycoderma hormiscium vini*); c. Vinegar plant (*mycoderma aceti*, Fig. 55, 3); d. Tannin fermentation mould; e. Milk-fungus, articulated mould, or *oidium lactis* (Fig. 56), and others.

Oidium Lactis.—This form of cryptogamic growth, which especially interests us, has the following characters: Articulations, cylindrical or oval, united into branched chains of greater or less length, often resembling mycelium. It may develop to appear like the fermentation fungus where it is submerged, while on the surface it forms mycelium out of the cylindrical sections, from which mycelial branches shoot into the air, whose longish cells readily fall apart. When these articulations are placed in a solution of sugar of milk, and excluded from the air, the milk-fungus again develops, resembling the higher yeast-fermentation.

In the true *oidia* found on living plants, as the so-called mildew (*oidium Tuckeri*), the common vine-disease, the rows of cells take a clavate form, the extremity of each successive joint swelling somewhat more than the preceding, which does not occur in the *oidium lactis* in so striking a manner.

The jointed fungus is found in sour milk, and in general attending the decomposition of sugar of milk, where lactic acid is formed; it is marked by its cylindrical cells.

All these forms of bacterium, and also the yeasty structures, are closely allied to one another, and may be transformed into each other at will, as H. KARSTEN (*Chemismus der Pflanzenzelle*, 1869) especially has observed. If we place the micrococcus or bacterium, for example, in beer-mash, yeast is developed; solutions of sugar of milk, containing also nitrogenous substances, will develop milk-fungus; from the same, in diluted alcohol, the vinegar-plant is formed; this latter may, in like manner, be transformed into the milk-fungus, or into the yeast-fungus, at pleasure, according to the nutrient fluid. From the micrococcus we have sarcinæ, bacteria, vibriones, and leptothrix threads, and these may again separate into micrococcus. In all these transmutations, the fluid, temperature, and air, play important parts, without our being able, however, at the present time, to discover all the conditions under which one or the other form finally and certainly will appear.

It has been asserted by some, especially by BAIL, HALLIER, LÜDERS, and in part also by HOFFMAN and others, that mould-producing conidia can be developed from these organisms; this has been disputed entirely by BARY, KARSTEN, and others. BARY considers all these forms, also the various fermentative fungi, as independent, organic species, while KARSTEN affirms that they are only transition stages of free vesicles of the tissue-cells developing and increasing independently.

The fungal elements found on the human skin agree with the true fungi, especially with that of milk, in the size and shape of their cells, and also in their manner of development and growth. They consist of the sterile, yeast-like *mycelium* of various moulds, which assumes peculiar shapes on account of the altered nourishment, temperature, and other relations; they vegetate upon the animal organism between the epidermal cells and in the hair-follicles and hairs. The varieties most interesting to us, the *achorion*, *trichophyton*, and *microsporon*, will be described later on. These forms have their origin, it appears, in the conidia and mycelia of mould, and, arriving upon the human skin, take root, finding here conditions favorable for growth, and develop further in the well-known manner.

c. MOULD-FUNGI.

These elements, alluded to on page 410, are distinguished from the fermentative or yeast fungi, by the fact that the latter never display any organs of reproduction, while the varieties of mould-bearing conidia must, under favorable conditions, develop fruit and reproductive organs.

The *thread moulds* (*hyphomycetes*) live on the surface of fluid, and require atmospheric air for their growth. The simpler forms of them are related to the fermentation-fungi by means of the so-called *oidium lactis*.

The hyphomycetes, like the yeast-fungi, are among the most wide-spread organisms in nature, and their diffusion is assisted greatly by various favorable conditions and peculiarities, for they thrive readily in all climates, the very extremest excepted, and their form varies considerably, according to the nature of their pabulum. They flourish both on vegetable and

animal bodies, and exercise a prejudicial influence upon them, as, for instance, the *aspergillus* in the ears and lungs.

It has been determined with certainty, during the last ten years, that a number of cutaneous diseases are caused by the presence of vegetable parasites in the skin, and these it is that most concern us.

In the course of a great number of experiments in the cultivation of scales, hairs, and nails, from the human skin affected with parasitic disease, I have sought to ascertain the fungi producing them; and it appears that those forms which are the most common are the very ones that excite the diseases in question. Nevertheless, there is no doubt that other rare fungi may be the cause of skin-diseases, the *trichothecium*, which I found in *eczema marginatum*, abundantly proving this.

The appearance of fungus upon and between the epidermal cells is a threefold one. When we examine the scales from an affected part under the microscope, with the addition of a drop of a potash solution (one part to ten), we find—

1. *Unchanged mycelial threads*, which, consequently, can be recognized as such, and which only exceptionally produce conidia on the human body. These cryptogamic tubes penetrate between the cells of the epidermis, are greatly branched, and, after cultivation, display the firm coherence of their parts characteristic of a mycetal nature. In numerous cases I have seen them develop directly into the *hyphomyces*.

2. *Cell-structures* belonging to the class of the *achorion*; all those forms which have a yeast-like appearance, round or oval, remind us of the beer-fungus, as is the case in *favus* and *herpes tonsurans*. These forms are always present in these affections in greater or less quantity, according to the grade of the disease, while the unchanged and recognizable mycelium before mentioned is, in many cases, entirely absent. They grow with difficulty, or may not vegetate at all when removed from the skin; that is, they develop no conidia, because the conditions of life demanded can be with difficulty, and only approximately, obtained in any cultivation experiments. The fungus frequently dies when kept too wet, or too cold, etc., and, like other fungi, may develop a quantity of micrococcus or bacterium, of which we will speak more fully hereafter.

3. *Micrococcus- and Bacterium-like Bodies*.—These structures are found in all organic tissues undergoing decomposition, therefore almost invariably in the cells of the epidermis which have been destroyed by the presence and pressure of the mycelial fungus-threads. The more moisture, blood, pus, and the like, there is present, the more numerous are they, and I often observed that, with their increase, the mycelial threads diminish in numbers, the former thriving *in fluids*, while the mycelium lives only *on a moist surface*. In very dry places they are more or less absent, and often entirely. I believe, after very many observations, that we may conclude that their presence is of no particular importance in the diseases here treated of.

The forms above described have their origin in the commonest moulds in nature. We can readily explain, then, why parasitic diseases are so frequent, when we consider that all the peculiarities are present necessary for the spread of the plant in the most favorable manner possible. For—1. Each mycelial cell may develop into a new plant; 2. Under certain conditions the chlamydospores already described can arise in these mycelial cells, and again produce mycelia with sterile hyphens; 3. Its mycelia generally produce a considerable number of prolific (that is, conidia-bearing) hyphens; 4. The conidia generally are found on each hyphen in very great quantity, and each has the power of the further production of mycelium with new hyphens. If we take, for example, the *Mucor racemosus*, we find that numerous hyphens shoot up, each bearing one or more vesicles, and each of these filled with some hundreds of conidia; any one of these conidia is capable of producing again the same phenomena in decomposing bodies. But here we meet with a peculiarity; the determination of the species of fungus causing a disease must necessarily be of secondary importance, inasmuch as one form passes so readily over into the other. For example, when the conidia of *mucor* fall upon a soil poor in nitrogen, *penicillium* is developed, and not *mucor*. It has been also proved by various experimenters that the *penicillium* likewise is connected with *torula* and *aspergillus*, and that the one can be produced from the other, it depending solely on the composition of the nutrient material as to which of the

forms is developed. It is true, these relations are not yet recognized with absolute certainty; we are acquainted with the appearance, but not the proximate causes. This *mucor racemosus* is therefore in a condition further to grow and increase in all possible media which are not too moist, as is also the closely-allied *penicillium glaucum*; only, the latter vegetates with much greater readiness. Moreover, we frequently have changes of form, so that we have a number of fungoid productions of quite heterogeneous development. From *mucor racemosus*, or *mucor nigricans*, we may have *penicillium*, and from *penicillium glaucum*, on the other hand, *penicillium candidum* and *fuscum* may develop in one and the same substance, when the first stages of putrefaction are over.

The grades of moisture and temperature play an important part in all these events, as well as in those that follow, but, as there have been no exact observations made in this respect, we cannot yet determine, for example, under what conditions torula will come from *penicillium glaucum*, or when *penicillium candidum*.

If we place the conidia of *mucor* or *penicillium* under fluid, the fermentative fungi appear each according to circumstances, that of beer, wine, vinegar, or milk; from these latter, likewise, micrococci, bacteria, and vibriones, may again develop.

It need not surprise any one, who is even very slightly acquainted with its nature, that generative fungus is so seldom observed on the human skin (HALLIER); for the fructification of a fungus can happen only when allowed a very tranquil and undisturbed growth, so that it can send conidia-bearing hyphens to the surface. This, however, is not possible on the human skin; and, if it should occasionally happen, they are immediately rubbed off by the clothing, and the fungus, after it is once thus acclimated, has no other manner of growth left but that of the mycelium and the other forms described above; this fact must exercise a not unimportant influence upon the form and manner of vegetation of this constrainedly sterile mycelium.

The *aspergillus nigricans* and other fungi, which are found in the human ear and lungs, prove that mould can fructify very well in places where its hyphens are permitted to develop freely toward the surface.

In order, now, to learn to recognize the fungi producing various diseases, our principal task is to cultivate, in various manners, and in the proper apparatus, the affected scales, crusts, hairs, and nails, with the fungous elements which they contain, and to force the mycelium and the achorion-like cells present to a further development, and to the production of conidia.

In this, various important circumstances must be regarded :

1. The rapid growth of mould and conidia can take place only on the access of air.

2. The grades of temperature and moisture are of importance ; the latter must not be too great, and both should be as constant as possible. The higher the temperature, in general, up to 30° C. (86° Fahr.), the more favorable the conditions for the development of the cryptogamic cells.

3. The presence of organic substances is necessary, for only the micrococcus and yeast can thrive continuously in fluids.

4. Light is serviceable, although many moulds may develop without light. The results attained will be given in the special part.

Etiology of Parasitic Skin-Diseases. — Moisture and warmth favor parasitic diseases, and therefore we find those living in moist basements, and newly-built houses, or occupying rooms facing north, frequently affected with herpes tonsurans. In these places we often find, at the same time, the clothing, bread, shoes, and linen, mouldy, and the presence of the fungus is shown by the musty smell. Parasitic eruptions may also be produced by the long-continued use of water-dressings, especially when the cloths used are not frequently changed ; thus, we sometimes find vesicles arranged in a circular form around wounds which have long been treated with fomentations. Pityriasis versicolor is developed in those who sweat profusely, and wear tight-fitting under-clothing, and change it seldom. The disease is often communicated from domestic animals, especially dogs ; also from one person to another, either by immediate contact, or through the medium of the atmosphere, which latter method of contagion seems to occur principally in favus, whose particles are loosened from the head in large quan-

tities, and are wafted by currents of air. These diseases are spread most readily in places where many persons remain together, as in schools, confined dwellings, etc.

Influence of the Vegetable Parasites on the Skin.—First of all, we have the subjective sensations, especially that of itching, which is more or less intense according to the form of the disease; further, the feeling of burning occurs in some cases, and occasionally painful sensations are felt, which may be very severe, especially in favus, accompanied with ulceration. The objective changes are more worthy of consideration, which also vary in the different parasitic diseases. Thus, in pityriasis versicolor, we find brown-colored spots, mostly on the breast and back, also on other places; in fungi affecting the nails, we have a discoloration of the nail, a moderate increase of its substance, and, finally, a separation of the whole nail. In herpes tonsurans, besides the vesicles and maculæ, there is also a considerable desquamation, and a breaking off and falling out of the hairs of the head and other parts. In parasitic sycosis, a rare affection in Germany, but common elsewhere, there is inflammation of the hair-follicles, with the formation of pustules, and infiltrations of the hairy parts of the face. In favus, which principally affects the scalp, the latter is at first covered with scales alone, and isolated crusts; but, when the parasite has penetrated deeply, the hairs likewise are altered, become brittle, losing their lustre, they appear to be covered with a fine dust, and ultimately fall out. The great accumulation of fungus causes the skin to atrophy from pressure, so that, after long continuance of the disease, the hairs are lost and the whole scalp has become permanently atrophied, being replaced by a thin, white, shining cicatrix.

Propagation of Parasitic Skin-Diseases.—As already said, we must look upon the air, the clothing, and linen, etc., as the conveyors of the fungi which infect the skin, and the possibility of contagion is increased with the amount these contain. We will omit for the present the consideration of other conditions, such as cleanliness, various precautions, the relations of life, and individual idiosyncrasies. PASTEUR furnishes us with some exceedingly interesting facts as to the parasites contained in the air.

In order to determine the quantity of fungous elements in the air of different localities, PASTEUR made use of the following means: He took a glass flask of two hundred and fifty cubic centim. capacity; this he filled one-third with a suitable fluid (a saccharine solution), which was boiled, and the neck of the flask hermetically sealed during ebullition, thus creating a vacuum. At the spot required the neck was broken off, the air to be examined from a certain locality flowed in, and the neck was again sealed, the fluid remaining untouched. In two experiments made upon an open terrace in Paris, he found fungous development in both flasks, opened after seven or eight days. In four trials, which he made in the same place after a heavy rain, organisms were in one flask after nine, and in a second after ten days; the other two were free from fungi after a year's expiration. When filled with air from his laboratory, vegetable organisms were found in two flasks immediately, while four others remained even ten months free; in eleven later trials fungi were found in all. Of ten flasks opened in a cellar of an observatory in Paris, one showed a fungous formation, the nine others remained free at the expiration of nine months, while, in those made at the top of the tower (with a light wind blowing), organisms immediately appeared in all.

In the country at the foot of the Jura Mountains, and far from human habitations, twelve of twenty flasks remained free; of twenty filled with air at a height of eight hundred and fifty metres, fifteen were free. Of twenty filled at a height of two thousand metres, only one showed fungi. On the other hand, only three, of thirteen flasks opened in an ale-house, remained free.

From this it appears that the amount of fungi in the air was increased in proportion to the proximity of human habitations, and diminished by removal from them.

Corresponding to this is the frequency of parasitic skin-diseases, for they are most abundant in places where many persons congregate, as in close dwellings, schools, and institutes.

BERGERON collected material partly from the records of the recruiting commission, and partly from the entries of the department physicians. The number of favus and herpes tonsurans patients, thus brought together, amounted to twelve thousand.

He found that no department in France was free from parasitic diseases, and that they were differently distributed in the various sections. Thus, in the south, there were about twenty parasitic out of one thousand cutaneous patients, about the same proportion on the northern coasts, but this class of affections was more rare in central France. That poverty, uncleanness, and a degraded state of the people, are not wholly to blame, is shown by the fact that the better class, who lived mixed with a starving people, were also frequently attacked.

The question arises, if the fungi are so abundant in the air,

why is not every one affected? Some authors assert that a particular disposition is necessary for the fungus to vegetate on the surface of the skin. Thus, for example, DEVERGIE does not look upon the fungous growth as the most important part of these diseases. He believes that fungi behave on men as they do on plants, for, in epidemics of potato-rot, the greatest quantity of fungus may be present just at the moment of its cessation. DEVERGIE, therefore, believes that the question of the spontaneous origin of this disease is not yet decided. The experiments already given with the germination and transplantation of the scales and crust place it beyond doubt that the changes resulting in the skin from the introduction of the fungus can be produced alone by these elements; on this supposition, we can also assume the existence of a certain disposition to these affections.

Pityriasis versicolor and *herpes tonsurans* are found on healthy, vigorous persons quite as frequently as on those who are weaker; *favus*, however, comes mostly on poor, badly-nourished persons, in whom neglect, poverty, and lack of food, predispose to, while filthiness favors, the development of favus. The question, why all persons are not attacked by parasitic diseases, is, therefore, answered of itself. Cleanliness, repeated ablutions, and baths, with or without soap, remove and destroy the fungous spores which fall upon the skin, before they have time for further vegetation, while want of care, a continuance in damp dwellings, and all the baneful influences mentioned, are quite sufficient to explain the frequent occurrence of these affections.

b. SPECIAL DISEASES.

1. FAVUS.

Syn. *Tinea vera*, *Porrigo favosa*, *Scutulata*, *Lupinosa*, *Achorion Schönleini*, *Erbgrind*, NEUMANN; *Phytosis favosa*, *Tinea favosa*, *Mycosis achorina*, *Porrigophyta*, *Teigne faveuse*, *Crusted or Honeycomb Ringworm*, or *Scall*.—L. D. B.

This disease is characterized by the formation of pale or sulphur-yellow crusts, generally rounded, with an outer concave and inner convex surface, presenting a crab's-eye appearance. The crusts are lodged in depressions in the skin, cor-

responding to their thickness, and are recognizable by their peculiar, musty smell. When the crusts stand isolated from one another, the disease is called *favus dispersus*; when confluent, *favus confertus*.

In its earlier stages the disease has much the same appearance as a terminating herpes tonsurans, namely, thin, roundish scales traversed by a hair. Some of these scales then acquire in their centre a light-yellow prominence of the size of a poppy-seed, which rapidly increases in size, and, after it has attained perhaps the size of a lentil, assumes the peculiar appearance of a favus-crust. The characteristic forms disappear with the duration of the disease, and the crusts form irregular masses, whose surface very readily crumbles off.

When the crusts are removed, we find a cup-like depression in the cutis, which has either a thin, shining epidermis over it, or is devoid of any covering, that is, ulcerated. This depression is plainly the result of pressure. After the disease has lasted for years, the ulcerous losses of substance are generally replaced by a thin cicatrix adhering firmly to the cranium. The hairs passing through the favus crusts are thin, short, colorless, have lost their lustre, and are dim, as if covered with fine dust; they are also harsh and brittle, and split readily, both in their shaft and root, and are easily extracted. Thus does favus appear on the scalp, its favorite seat, sometimes also with the development of pustules and suppurative inflammation. On other parts of the skin the crusts are usually preceded by the formation of vesicles, the size of a pin's-head, arranged in circles, and which dry to yellow crusts (*scutula*)—the herpetic stage (KÖBNER).

The presence of a fungus in the crusts was first proved by SCHÖNLEIN, 1839; in the hairs, by GRUBY and WEDL. REMAK (*Diagn. und pathog. Untersuchungen in der Klinik von SCHÖNLEIN*, Berlin, 1845) was the first to successfully inoculate the favus-crusts upon his own arm, and there produce favus; he believes that a special predisposition is requisite in order that it may take, which view, in regard also to other diseases of this class, has been for a long time, unfortunately only too exclusively, maintained by many physicians; and we likewise must incline to it. VOGL believes that a scrofulous exudation always precedes favus; STIEBEL holds favus to be the refuse of scrofula (?); according to NEUKRANZ, tubercle and favus are identical. Certain French dermatologists still hold in part to these views;

thus CAZENAVE regards the fungus as a supplementary development upon greasy, sebaceous masses; and DEVERGIE thinks parasites in general but accidental elements.

Many different views as to the nature of the *achorion Schönleini* have been promulgated since its discovery.

ROBIN ("Histoire Nat. des Végétaux Parasit. qui croissent sur l'Homme et les Animaux Vivants," Paris, 1853) places favus among the Oidia, genus Achorion. HEBRA (*Zeitschrift der Gesellschaft der Aerzte*, 1854) makes all parasitic skin-diseases depend on a single fungus, and was led to this opinion from the clinical experience that compresses and bandages used as water-dressings frequently produce favus or herpes tonsurans, and even a combination of the two. The observation that favus and herpes tonsurans appear at the same time on various parts of the body has confirmed HEBRA in this view. According to him, even pityriasis versicolor may be produced by the same fungus, and is only the earlier stage of development of the fungus. HUTCHINSON also advances this view.

STARK observed that herpes tonsurans developed after a spontaneous inoculation with favus, whose vesicles again dried to scutula, and therefore passed over into favus again. PICK also assumes the identity of the fungi of favus and herpes tonsurans (*Verhandlungen der bot.-zoolog. Gesellschaft*, 1864); for, after epidermal inoculation with favus-crusts and herpes scales, he saw sometimes the one, sometimes the other disease appear.

HALLIER first made direct experiments with favus-crusts by placing them upon sections of apples and lemons, and succulent plants, also in blood, albumen, and glycerin, and actually saw the fungus (*penicillium glaucum*) develop from the achorion-cells. While, however, this investigator at first (*Pflanzl. Parasiten des menschl. Körpers*) considered favus and herpes tonsurans to be derived from penicillium, he afterward altered his opinions on the subject ("*Gährungserscheinungen*"), and attributed herpes tonsurans to the *aspergillus*.

These assertions as to the identity of the fungi, producing the various diseases, met with an eloquent opponent in BÄRENSPRUNG (*Annal. d. Charité*, Berlin, 1855); but he never sought to make his assertions valid by direct experiments.

STRUBE (*Dissert.*, 1863), and KÖBNER (*Klin. und experiment. Mittheilungen*, Erlangen, 1864), after inoculation with the scales of herpes tonsurans, saw the same disease develop; likewise, favus after favus. KÖBNER, to be sure, recognized a stage of favus consisting of the formation of vesicles (GUDDEN) resembling herpes, but even here a difference in the vesicles is clearly enough recognizable, in that they are greater and more persistent than in herpes tonsurans. PEYRITSCH also arrived at similar results (*Jahrb. der k. k. Gesellsch. der Aerzte*, 1869); after numerous experiments with favus he always saw this, and never herpes tonsurans, result.

The above-mentioned direct experiments of HALLIER have been repeated by other observers, KARSTEN, HOFMANN (*Bot. Zeitung*, 1867), BAUMGARTEN (*St. Louis Med. and Surg. Journal*, 1868), KÖBNER, and PEYRITSCH, but their

results do not agree with each other. Thus, while HALLIER and BAUMGARTEN regard *penicillium* alone as the primordial fungus, HOFMANN holds *mucor* to be such, and LOWE ("On the Identity of Achorion Schönleini and other Vegetable Parasites with *Aspergillus glaucus*, *Annal. and Mag. Nat. Hist.*, 1857) looks upon the *aspergillus* as the one, KÖBNER, PEYRITSCH, and KARSTEN, consider that the penicillium, or other fungi which may develop, as only chance impurities, which have nothing to do with favus. Finally, direct applications of the fungi to and beneath the skin have been tried. The results differ also in this class of experiments which have been made as well by various persons. While HALLIER and PICK by the application of penicillium to the skin produced an herpetic stage of favus, and HALLIER caused even favus itself, and ZWIN (*Bair. Intelligenzblatt*, 1868) excited favus on rabbits by inoculations with penicillium, KÖBNER, PEYRITSCH, and others could never make it "take."

HALLIER believes that the *penicillium*, by virtue of its great power of acclimatization, is more suited than many other nearly-related fungi to vegetate in the human skin. The nature and appearance of this mould vary according to the nourishment obtained, the grade of temperature, and the relations of moisture present, as I have myself had many opportunities to prove. ARDSTEN describes a *puccinia favosa* (Fig. 57), which, however, is but a chance addition, and is also the *puccinia graminis*.

Some experiments which I made furnished the following results: If we soften a favus-crust in water, it is seen to be composed of variously-formed fungous elements; the greater part consisting of roundish cells (*a*, Fig. 57) which are formed upon and between the epidermal cells and within the hair-follicles, lying partly in groups together; *b*, of cells lengthened, not rarely branched and generally jointed, which remind us of certain forms of milk-fungus, as seen in the culture of the true oidium, especially in sugar of milk, or tartrate of ammonia; in a solution of sugar of milk, these, as also the favus-cells themselves, can readily pass over into the actual forms of oidium. The conidia are often cylindrical and loosely arranged in chains. Moreover, we often find true mycelium (*c*); this generally has somewhat clearer, more watery contents, and consists of symmetrically-branched and regularly-segmented fibres, which do not fall into the component cells on agitation. Finally, we find also the micrococcus and bacterium. These are seen as constant companions of favus, and are found between almost all the loosened cells of the epidermis.

The hairs (Fig. 58) present relations similar to those of the

crusts, but they are not thus found until a late stage of the disease, as GRUBY and WEDL have shown.

FIG. 57.



Fresh favus-crust finely ground, with the addition of water.—*a*, Single, roundish, and cylindrical conidia arranged in groups and chains; *b*, Proper achorion; *c*, Mycelium; *d*, Epidermal cell, with micrococci and bacteria.

FIG. 58.



Favus-hair treated with caustic potash. The hair split in its cortical substance by the mycelium.

After gentle maceration in a weak solution of caustic potash (one part to ten), and a subsequent washing, we see in the hair numerous fungal elements, especially in the fibrous portion, running longitudinally between the fibres. They consist of the same cells described as existing in the crusts, which are almost always seen as simple chains running in one direction in the interstices of the longitudinal fibres of the hair; but we find also germs resembling milk-fungi, in considerable number between the fibre-cells; also here and there scattered conidia. But the mycelia and conidia are found principally between the root-sheaths.

I consider, with HALLIER, the achorion as a morbidly-altered penicillium; but it was only on cultivation that the achorion grew, and sent out branches, which as a rule fell in pieces again without producing conidia; on the other hand, I was able to obtain again the penicillium by proper treatment, from the above-described conidia and mycelia, which had apparently not been morbidly altered, within ten to twenty days. Inoculations which I made with penicillium, upon the human skin, were always unattended with success.

Prognosis.—Favus is a curable disease, but the treatment must be continued for a long time, in order to prevent the

fungoid elements which may possibly remain on the skin and hairs from again germinating.

Treatment.—As favus is solely a local affection, we use only remedies which act locally. First, *the removal of the crusts*. The barbarous method of the pitch-cap, or *calotte* (that is, strips of linen spread with tar and laid on the head and removed with a jerk), is at present no longer used; the crusts should be saturated with a large quantity of oil (as in eczema and seborrhœa), and they will loosen in from twelve to twenty-four hours, however firm they may have adhered to the skin. After these are removed, the hairs are epilated, the affected portions rubbed twice a day with *sapo viridis*, and covered with compresses soaked in a solution of carbolic acid (℞. Acid. carbol. ʒj; glycerin., alcohol, āā, ʒj; aq. destill. ʒ vj), or with petroleum. This method (HEBRA) is certainly preferable to frictions with turpentine, and also those with equal parts of croton and olive oil. WALTER treats favus without epilation by a compound of a drachm of sulphuret of potash and a pound of *sapo viridis*; this to be rubbed in two or three times daily, and the parts kept wet day and night with a moist cloth; the hair is shaved. LOCHER recommends sulphuret of lime. We may also employ successfully lotions of corrosive sublimate and alcohol, or benzine, and also frictions with an ointment of veratrin.

Other methods of treatment worthy of mention are the following: frictions with solutions or ointments of acetate or sulphate of copper or iron, acetate of lead, calomel, iodide of sulphur, sulphuret of potash, manganese, and charcoal; also the wearing a wax cap; likewise an ammoniac plaster (one part of gum-ammoniac and three of acetic acid, boil and strain, making it the consistence of honey). This is spread upon linen, which is applied in strips, and torn off in two or three days.

2. HERPES TONSURANS.

Syn. *Herpes circinatus* (Bateman), *Trichophyton tonsurans*, *Porrigio scutulata*, *Tinea tonsdens* (Mahon), *Trichomycosis*, *Ringworm* (Plumbe), *Scheerende Flechte*, NEUMANN; *Tinea trichophytina*, *Tinea tonsurans*, *Phytosis tonsurans*, *Trichosis furfuracea*, *Mycosis tonsurans*.—L. D. B.

This is a disease affecting both the hairy parts of the body and those devoid of hairs, and has various forms: 1. *Herpes*

tonsurans vesiculosus; 2. *Herpes tonsurans maculosus*; 3. *Herpes tonsurans squamosus*; the latter form being merely a later stage of the two former.

Herpes tonsurans vesiculosus appears in the form of small, punctate vesicles, with clear contents, arranged in a circular form, which dry a few hours after their appearance, leaving small, thin scales and crusts. New vesicles are continually formed in the immediate neighborhood, and in this way the disease extends peripherally, so that the circumference is formed of vesicles, and the centre of thin scales. Sometimes several of such circles join together, and, if the eruption disappears at the points of contact, we may have serpentine lines, as in psoriasis.

Herpes tonsurans maculosus takes the form of pale-red spots, having a small, whitish scale in their centre; they increase peripherally, while they pale in the centre, thus presenting a picture similar to erythema annulare.

Herpes tonsurans squamosus, which is the last stage of the two former, when occurring on hairless parts, is in the form of scales, mostly arranged in circular shapes.

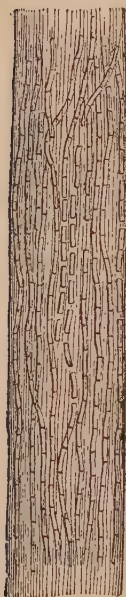
Herpes tonsurans on the scalp presents the following changes: The hairs fall out or break off on circumscribed spots, and the scalp becomes covered with thin scales or crusts, which come off easily. The fungus (*trichophyton*) is found both between the cells of the epidermis, and also in the hairs and the root-sheaths. The hair becomes lustreless and brittle, loses its elasticity, and appears filamentous at the point of fracture.

Etiology.—The causes operating in the development of herpes tonsurans are various. First of all, heat and moisture are favoring elements; therefore, we find the disease so frequently after long-continued use of moist compresses, especially when they have not been kept very clean. The wet cloths, which are so frequently employed around the region of the stomach and loins by hydropaths, produce herpes tonsurans, and frequently ulceration ensues, after a protracted use of such bandages. Herpes tonsurans is very frequent in children, and sometimes all the pupils of an institution will be affected. Damp dwellings, and the wearing of linen not perfectly dried, are common causes, and, as a rule, in the dwellings of such patients,

we find a growth of mould elsewhere, as on garments, boots, and bread. Sometimes domestic animals, especially cats, dogs, and horses, are the transmitters of the contagion.

As is known, MALMSTEN was the first to discover the parasite in the hairs; he noted its resemblance to the *torula olivacea*, or *torula abbreviata*

FIG. 59.



Broken portion of a hair affected with herpes tonsurans (*trichophyton*); conidia articulated in rows, and with numerous chains of spores in and upon it.

(CORDA, *Harskärande Mögel*, Stockholm, 1843). HERBRA found the fungus also between the epidermal scales (*Zeitschrift der k. Gesellschaft der Aerzte*, 1854); he considers it identical with favus, and was led to this conclusion, as before remarked, by the repeated observation that both appear together at the same time, and that herpetic eruption frequently precedes the crusts of favus.

KÖBNER was never able to produce any thing else but trichophyton from the cultivation of trichophyton, either in experiments upon himself, or in those upon animals. But favus, according to him, has an earlier herpetic stage, which is very similar to herpes tonsurans, but may be distinguished from it by the following characteristics:

Favus does not form such great circles as herpes tonsurans; it has larger vesicles, which are traversed by a hair, and its rings are of equal size; herpes tonsurans extends peripherally, and favus in depth.

HALLIER (*Pflanzliche Parasiten des menschlichen Körpers*) considers trichophyton as a moniliform arrangement of the spores of penicillium. He afterward declares (*"Gährungserscheinungen,"* 1869) that the fungus is an oidian form of mould in its highest development, that is, a torula-chain, proceeding from *aspergillus*; the spores are, therefore, the product of the dust-fungus of a mildew (*ustilago*).

The examination of the scales, with the addition of a solution of potash, shows cells scattered between the epidermal lamellæ, sometimes alone, sometimes arranged in groups or rows. They are spherical, seldom cylindrical, filled with homogeneous contents, but small, secondary cells are not rarely

seen within them. Sometimes the single cells are developed into short, thick, cylindrical tubes. More frequently we meet with coarser or finer mycelial filaments, variously branched, which, as a rule, are long-jointed, and filled with watery plasma. The parasite also comes between the root-sheaths of the hair-follicles, and even in the hairs themselves; in the former, as conidia strung together, from which branches are sent out, and in the latter as long-jointed chains.

The results of my experiments in the germination of this parasite confirm the observations of HEBRA, in so far that *herpes tonsurans* and *favus* can be produced by one fungus, and that the *penicillium*.

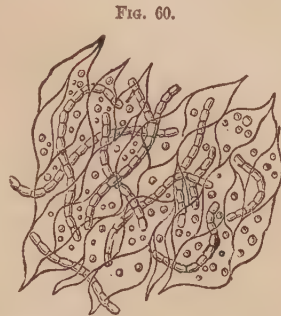


Fig. 60.
Herpes tonsurans, with partly dis-jointed and partly solitary conidia between the epidermal cells.

But in single cases, as will be shown hereafter, I was able to demonstrate the *trichothecium* as the exciting element. I was never able to develop *aspergillus* from the fungoid elements of *herpes tonsurans*.

Treatment.—*Herpes tonsurans* will disappear with the use of the following means, even when it has existed for a long time. In slight cases, the affected spots are caused to vanish entirely by vigorous frictions with potash-soap (*Schmierseife*). If the disease is very extensive, we shall succeed more quickly by rubbing on the soap, and allowing it to dry upon the skin (*Schmierseifencyclus*—*soap-cure*—as in psoriasis). We may also obtain success by washing with the *spiritus saponis alkalinus*. If the *herpes tonsurans* has lasted long, and there is infiltration in consequence, tar should be applied to the affected parts after the frictions. Washing with benzine, solution of borax, petroleum, and balsam of Peru, also with a weak solution of carbolic acid, gives good results.

3. ONYCHOMYCOSIS.

Syn. *Phytosis Unguium*, *Tinea Trichophytina Unguium*, *Onychia Parasitica*.—L. D. B.

By *onychomycosis* we understand an affection of the substance of the nail, produced by fungus, which presents the

following appearance: The nail generally assumes the shape of a claw, curved over the end of the finger, and ends anteriorly in a thickened extremity. Its surface becomes rough and uneven, the color dirty-yellow, and the whole nail is readily movable in its bed. We find also transverse fissures, of more or less light color, and yellowish spots in the centre and on the under surface. The nail flakes off readily, and is shed in crumbling masses.

The cases hitherto observed, whose number is very small, appeared both on the fingers and toes, and were associated, some with favus and some with herpes tonsurans. It would seem that the crusts or scales get beneath the nails from frequent scratching of parts thus affected, and that the fungal elements, finding there the proper conditions for their development, penetrate the nail-substance, whereby the latter is loosened, and suffers the alterations described. As the fungi grow exceedingly slow in this situation, it may readily happen that the herpes tonsurans or the favus has entirely disappeared from the spots where infection took place, while the onychomycosis continues.

Both the powdery and crumbling masses, as also fine sections of the yet dense nail-substance, show chains of conidia, with clearly-marked nuclei, and here and there free cells. The terminal joints of the chains are sometimes club-shaped.

Various views still prevail as to the nature of this fungus.

VIRCHOW (*Archiv*, IX. Band) describes a dense net-work, from which single broad threads shoot out, whose ends expand into small chains of oval spores; he also found umbelliferous structures. He concluded that different forms of this affection occur, related both to favus and to herpes tonsurans. The fungi are related to the *botrytis* or *peronospora* and *penicillium*.

BÄRENSPRUNG identifies onychomycosis with herpes tonsurans; KÜCHENMEISTER and HALLIER with achorion; KÖBNER describes two cases, which he classes with herpes tonsurans. He represents round cells with short concatenations, which, moreover, enlarge clavate, or branch, and finally may end in delicate threads, bearing on their extremities several elliptical conidia. KÖBNER also once discovered a *puccinia*.

If we examine a portion of diseased nail by making thin sections with a razor through the yellowish portions, we find its substance penetrated by short-jointed branched fungous threads, somewhat compressed, resembling, slightly, a tape-worm, whose sections, scarcely longer than they are broad, have generally a nuclear cell in their interior; we likewise see roundish cells of fungus scattered between the lamellæ of the nail, or arranged in groups, most of them likewise containing a small spherical secondary cell in their centre. Here and there we meet with more longish or oval cells, with two or more nuclei, somewhat resembling the *arthrococcus*. The contents appear in other respects to be watery. These cellular fibres display a firm power of cohesion, and, after maceration of a portion of nail in water, they may be moved, hither and thither, by slight pressure on the cover of the slide, without falling into their composite elements, and should therefore be considered as mycelial threads. We do not find any especial collections of *micrococcus* or *bacteria* upon or between the cells of the substance of the nail. In cases where the mycelia are less numerous, they may be more clearly seen after soaking the section in a solution of caustic potash (one part to ten).



FIG. 61.

Section of nail parasitically affected, with numerous concatenate conidia.

Treatment.—The treatment consists in removing the loose lamellæ of the nail, and employing local baths of caustic potash and corrosive sublimate (two grains to the ounce), and in repeated frictions with turpentine.

4. PITYRIASIS VERSICOLOR.

Syn. *Microsporon furfur*, *Kleinflechte*, NEUMANN; *Tinea Versicolor*, *Mycosis Microsporina*, *Chloasma*, *Maculæ Hepaticæ*, *Leberflechte*, *Taches hépatiques*, *Liver-spots*.—L. D. B.

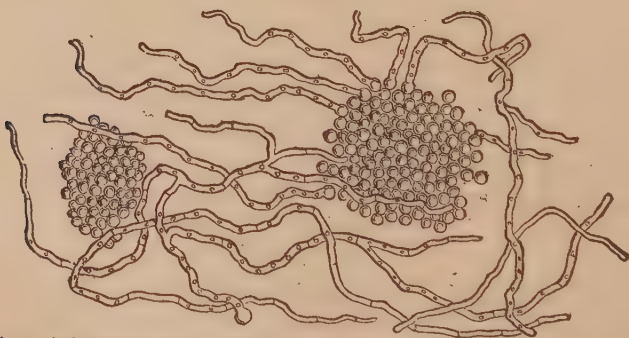
This is found on the breast, back, and upper extremities, seldom on the lower, and most rarely on the face; it comes as yellow or brown spots, mostly around the orifices of the hair-follicles, extends peripherally, and sometimes heals spontane-

ously in the centre while it progresses on the circumference, thus forming a circinate eruption; after long continuance, it may form diffuse patches, which often embrace the whole thorax, and in which no marked boundary-lines can be discovered. The scales are readily detached by the nail, which will serve to distinguish them from the pigmentary depositions of *chloasma uterinum*.

The disease is never found on very small children, is most frequent on the young, and more rare on those advanced in years; it comes principally on those who sweat a great deal, seldom bathe, and wear tight-fitting under-clothing, changed at long intervals.

In the scales we find groups of conidia, generally roundish, and more or less numerous, which lie between the epidermal cells; these conidia have a sharp outline, and are filled with an apparently watery, homogeneous, sometimes slightly-granular plasma; they develop like the beer-fungus, but with short dendroidal threads, curved hither and thither, mostly without joints, and frequently present in great numbers; these roundish groups of conidia are erroneously considered by some observers to be surrounded by a common membrane, and are therefore thought to be *sporangia* with free conidia, from which the radiate cell-fibres are said to emanate (HALLIER).

FIG. 62.



Pityriasis versicolor (after fourteen days' culture). Groups of conidia, some sending out long branches.

EICHSTEDT (*Frorieps Notizen*, 1846) first discovered the fungal growth in this disease; KOBNER (*Experiment. Mittheilungen*, 1864) transferred the *microsporon* to his own skin, and to that of rabbits; HALLIER derives the

fungus of pityriasis from aspergillus (*Die pflanzl. Parasiten des menschlich. Körpers*, 1866, page 79); as this fungus requires for its perfection rather a dry location, it chooses preferably the horny layers of the epidermis, and here produces the disease in question, and appears as the achorion form of *aspergillus*. HALLIER kept some membrane affected with pityriasis for months moistened with water, and at the end of a year all the stages in the development of aspergillus were presented; the microsporon also germinates in glycerine, according to HALLIER; on the other hand, he afterward asserts ("*Gährungserscheinungen*") that the fungus of pityriasis is a *stemphylium* obtained by culture in starch-paste, and this comes from the *aspergillus*, *eutotium*, or *ustilago*.

The cells of microsporon are very slow in their development, and the changes they undergo in their growth and death may be easily studied. I have carefully drawn, by means of a camera lucida, the small groups in different states. In some cases it was possible to see them increase, and the further development of the embryo-cells which were formed, one parent-cell producing as a rule two secondary cells, which separated from each other, and from which tubules again sprouted. In other cases the cells expanded into tubes; again, in others we first observed a swelling of the microsporon-cells, which was followed by a clouding of the contents, and a production of daughter-cells; the membrane and even the whole group of cells finally perished, and instead of them were found micrococci and bacteria corresponding to the original microsporon-cells.

Therapeutics.—The treatment is the same as in herpes tonsurans.

5. SYCOSIS PARASITARIA.

Syn. *Parasitäre Bartfinne*, NEUMANN; *Tinea Sycosis*, *Sycosis contagiosa*, *Mentagra*, *Tricophytie sycosique*.—L. D. B.

This, according to BAZIN and KÖBNER, is developed from *herpes tonsurans barbæ*, although every herpes tonsurans of the beard is not necessarily followed by sycosis. KÖBNER gives the name *folliculitis barbæ* to the non-parasitic form of sycosis, as distinguished from the present.

The two forms are easily differentiated by the following marks: In parasitic sycosis the hairs are first affected, while in the ordinary form they do not alter until afterward, that is, when the exudation into the follicle has become purulent. The seat of the *tubercular trichomycosis* is at first the same as in simple sycosis, and does not extend deeply into the skin until later, and rarely into the subcutaneous cellular tissue; the tubercles are distributed over the chin, cheeks, upper lip, and submaxillary region. In *simple sycosis* the hair-follicles and

corium are involved, and the subcutaneous tissue afterward takes part in the inflammation. Ordinary sycosis may remain confined to one spot for months or years, while the parasitic variety makes rapid progress (KÖBNER).

Parasitic sycosis is preceded in ninety-five cases out of a hundred by herpes tonsurans, while ordinary sycosis begins with papules. In parasitic sycosis the source of infection can generally be discovered, and it does not return after being once cured, while ordinary sycosis often relapses (KÖBNER).

Sycosis parasitaria is a rare disease in Germany, and, in spite of the great amount of material at my command, I have only twice seen the disease; in one case I could trace the infection to a dog, and in the second to a horse, both of which had herpes tonsurans. Just before the completion of this book, Dr. Duhring, of Philadelphia, was kind enough to send me some hairs from sycosis patients in the Hôpital St. Louis, from one of which I present the annexed drawing.

FIG. 63.



Hair, with conidia lying in groups upon it, and with conidia between the fibres arranged in joints.

As before mentioned, I had one case worthy of note on account of the certainty with which the source of infection was discovered. A gentleman presented himself to me with herpes tonsurans on the chin. At my request, he searched for the cause of the disease, and discovered that his dog had the same malady in a high degree. Shortly after, his servant also came with herpes tonsurans on the chin and submaxillary region; on the latter, besides the circular eruption of vesicles, there were also quite deep infiltrations of the skin, and flat pustules at the orifices of the hair-follicles (sycosis parasitaria).

Of course, the diagnosis of herpes tonsurans was confirmed on the master, servant, and dog, by the microscope. About a year later the gentleman came with an *eczema marginatum* on the inner surface of the thigh, corresponding to the scrotum; this place increased during treatment, by repeated eruptions of vesicles on its periphery; at the same time circular eruptions of vesicles appeared in close proximity to the edge, and, after their desiccation, fungal elements were discovered in the exfoliated epidermis.

Therapeutics.—Treatment the same as in favus. Epilation is absolutely necessary.

6. ECZEMA MARGINATUM.

Syn. *Tinea circinata*, *Herpes Circinatus*, *Erythrasma*, *Erythema Marginatum*.—L. D. B.

On the genitals, on the inner surface of the thigh, on the abdomen, and around the anus, sometimes in the axillæ, and also on the legs of infants who are wrapped up, there comes a disease in the form of brownish-red circles, and segments of circles, which spreads peripherally, partly in an elevated border, and partly with the formation of papules and vesicles, and which, in the mean time, heals in the centre; in the neighborhood of such places there are also smaller independent circles of papules and vesicles, which extend in like manner.

The longer the disease lasts, the more is the skin thickened and infiltrated, and the more numerous are the scales on the periphery, and also the yellowish or brownish-red crusts resulting from scratching.

Males are more subject to this disease than females. This is the affection to which HEBRA first gave the designation *eczema marginatum*; it was previously recognized by KÖBNER (*Klinische und experiment. Mittheilungen*, Erlangen, 1864) as a parasitic disease, and he believed that one and the same fungus produced *herpes tonsurans* and *eczema marginatum*. BÄRENSPRUNG had already described a similar affection under the name *erythrasma*, in which a fungus was said to be the cause, but he gave no details.

In the first edition of my book (*Lehrbuch der Hautkrankheiten*, pages 167 and 349) I gave my view briefly of this question. In the mean time, P. J. PICK (*Archiv für Dermatologie und Syphilis*, I. Heft, 1869) has also confirmed the presence of a parasite, and HEBRA (*Archiv für Derm.*, II. Heft, 1869) has found mycelial threads in some cases. But HEBRA still thinks it undecided whether the parasite is the cause, or only an accidental accompanier of the disease in question. He cannot, however, adopt KÖBNER's view that *herpes tonsurans* and *eczema marginatum* are identical.

In order to clear up the relations which the presence of the fungus bears to the disease itself, the following general questions must be answered:

1. Are fungi only adventitious elements of skin-diseases?

2. Does the presence of fungus exercise any influence upon the extension and form of a disease already present?

3. Does eczema marginatum represent, perhaps, only a modification of herpes tonsurans, which is determined as to its appearance by the influences mentioned, as, profuse secretion of sweat, an elevated temperature, and the friction of the parts lying in contact?

We answer the first question affirmatively, and expect to discuss it more fully in a special work hereafter; we pass directly to the two latter questions, and must answer the third also in the affirmative, for we have very frequently seen eczema marginatum follow an ordinary eczema intertrigo of the inner surface of the thigh. Thus, a person may acquire an eczema intertrigo from mechanical irritation (a horseback-ride, forced march, etc.), and the eczema may be limited to the spot where the scrotum lies upon the thigh. Fungal elements may now effect a lodgment from outside (most frequently from the linen), upon this hitherto non-parasitic eczema; here they find moisture and an elevated temperature, that is, those conditions which favor their further growth, and the eczema spreads correspondingly to the peripheral ramification of the mycelia, the disease assuming the characteristic, well-defined lines which have been described. On the other hand, eczemas which have only the characteristics of ordinary eczema, never have the sharp contour of eczema marginatum. We are not satisfied to make the diagnosis of eczema marginatum alone from confirming the presence of a parasite in the scales, for we well know that fungi may be accidental to skin-diseases. Much rather do we conclude from the peripheral extension of the vesicles and papules, and the presence of the parasite at the same time. It may here be remarked that it is advisable to take the fungus from the under surface of the scales for examination, in order to preclude the possibility of fortuitous impurities.

Eczema marginatum, therefore, can come—1. *From an already developed eczema intertrigo by the advent of fungus which vegetates further between the epithelial scales, and so exercises a modifying influence upon the form and extension of the eczema.*

2. A more common way is the development of eczema marginatum from *herpes tonsurans*, favored by the existence of the above-mentioned circumstance around the genitals, which exercise a great influence on the extension of the disease.

KÖBNER has rightly given prominence to this mode of origin, and just here have the most different opinions prevailed. To examine the matter more closely, take those cases in which *herpes tonsurans* and *pityriasis versicolor* attack alone the region of the genitals and the inner surface of the thighs, or where *herpes tonsurans* and *pityriasis* have involved a large portion of the surface. A close comparison of the peculiar characters of these two diseases will discover a sufficient divergence of forms. Thus, while *herpes tonsurans* forms sharply-defined circles or spots of vesicles on other parts of the body, the same disease is seen to progress on the genitals with those characteristics which have been described as belonging to *eczema marginatum*. The objection that they may be two independent diseases is refuted partly by clinical observation, and partly by experiments in germination from the scales. As to the former, I can show that, in some cases in which *eczema marginatum* returned, its first beginning was clearly in such circles of vesicles as are otherwise characteristic of *herpes tonsurans*; on the other hand, in those cases where a very extensive *herpes tonsurans* was present, we had around the genitals and on the inner surface of the thighs the marginal lines belonging to *eczema marginatum*.

To this correspond also the experiments in the cultivation of the fungi of the scales taken from patients with *herpes tonsurans* of the body, and *eczema marginatum* of the thighs at the same time.

The culture experiments of the products of these diseases showed the same parasite for both, and, as we shall hereafter see, I found the *penicillium* in most cases, and, on four occasions, a fungus which I find nowhere else described, namely, the *tricothecium*; so that the conclusion seems correct that *eczema marginatum* is often only a modified form of *herpes tonsurans*.

Microscopic Appearances.—If we examine under the microscope the scales from *eczema marginatum*, we find between the

epidermal cells both roundish (Fig. 64, *a*) and longish conidia, the former about the size of those of the *microsporon furfur*; they are arranged partly alone, partly in groups together; sometimes also concatenate (*see* Fig. 60), and generally refract light strongly.

FIG. 64.



Development of the Tricothecium within twenty days from the conidia (*a*) to tube (*b*), and to the formation of conidia (*c*).

In most cases they are filled with homogeneous contents; but not rarely do we find granules in the plasma, or two or more large structures embedded within. Some cells are developed in a somewhat tubular form (Fig. 64, *b*), which tubes only occasionally have one or several portions in them, but more have vacuoles.

FIG. 65.



Tricothecium.

Besides these forms, we find mycelium (Fig. 65, *a*) running between the epidermal cells: this mycelium is sometimes delicate, sometimes quite coarse, branched many times, often tortuously bent and twisted: they are rather long-jointed, and have numerous shining, globular structures in their bodies,

which are frequently very large, and have the appearance of vacuoles.

Moreover, as in all other parasitic skin-diseases, we find in and between the cells of the epidermis a great quantity of bacteria and micrococci. In those cases where the infiltration is considerable, and the skin covered with scales and crusts, I could rarely find any thing else besides micrococcus and bacterium, with which the epidermal cells were densely packed. It appears that in this, as in all skin-diseases dependent on fungus, and having thereby much dried blood and pus, the mycelium gradually perishes, and the cells of bacterium and micrococcus gradually preponderate, from which nothing is ever developed.

I have instituted experiments with the scales of eczema marginatum similar to those mentioned.

The above-described mycelial threads, drawn immediately after their preparation (Fig. 64), were carefully followed in their further development to the production of conidia, and in four cases of this disease I was able to produce a most interesting and hitherto undescribed form of fungus from the mycelium.

This parasite, which resembles very greatly the *acrothecium parasit.* described by CORDA, and which I have named *tricothecium*, is characterized by the following peculiarities:

At the period of its complete development it forms a delicate, yellowish-white tuft. Its many-branched mycelium is somewhat long-jointed by partition-walls; the conidia which show themselves first are formed on the extremities of the creeping mycelium. When perfectly ripe the conidia have a delicate membrane; they are longish and clavate, and are chambered by from two to four partitions; when seen alone under the microscope they are transparent and white. Beneath these conidia which appear first, there generally come several others on the same branch externally, either attached directly to them or borne on short pedicles of their own. Commonly several conidia are found on a common branch at a greater or less distance from each other, like short ears of corn, or bunches of grapes (see Fig. 65).

Of all the moulds given in the literature on the subject, the

present most resembles the *acrothecia parasitans* described by CORDA, and delineated (Fig. 49) in the second part of his *Icones*, as the type of a subdivision of tricothecium, and which was observed by its discoverer to be parasitic upon *stysanus*. It is distinguished from that of CORDA by its absolutely club-shaped conidia, seldom standing alone, but generally several together, while that pictured by the observer referred to frequently has longish conidia, frequently bent to one side, thereby being connected somewhat to the *fusisporium*.

FIG. 66.



Eczema marginatum, after twenty-four days' culture; the mycelia developed into penicillium.

The *Tricothecium roseum* and *album*, nearly related to this tricothecium, and which are frequently seen on decomposing vegetable matter, have two-chambered conidia.

In the remaining cases I was able, for the most part in the course of from eight to twenty days, to see *penicillium* (Fig. 66) developing from the mycelium running between the scales, and those cases were especially striking in which the vesicular element was very intense in the periphery of the eczema, so that there was scarcely a specimen made in which this fungus was not developed.

Two of the cases above given were associated with herpes tonsurans of the body, from whose scales also I saw the same fungus grow after cultivation.

RÉSUMÉ.

Collecting the results of the clinical and microscopical examination together, we have the following to explain the appearance of *eczema marginatum*:

1. A parasite coming upon an already existing cutaneous inflammation, with superficial loss of epithelium (*intertrigo*), may alter the form of an ordinary *eczema* to that of *eczema marginatum*.

2. An existing parasitic disease, especially *herpes tonsurans* or *pityriasis versicolor*, can, favored by the locality, develop into the form known as *eczema marginatum*.

3. In an earlier stage of the disease, the fungus is almost always demonstrable; in inveterate cases it is absent as a rule.

4. The fungal elements present in *eczema marginatum* develop, on cultivation, into *penicillium glaucum* or *tricothecium*.

Therapeutics.—The same remedies are to be used in the treatment of such *eczemas* as in *eczema* in general. But we must, from the first, be prepared for the obstinacy of the disease, especially in those cases where the patient must continue his business. A rapid cure can be obtained only when we can keep the patient in bed, and protect the scrotum from contact with the thigh. The parts are rubbed with *sapo viridis* or *spiritus saponis alkalinus*, or, in milder cases, with a solution of carbolic acid in alcohol; they are afterward tarred, or covered with the unguentum *diach. alb.*: a suspensory bandage must be worn for a long time after the cure, and the parts often dusted with starch, to prevent the frequent recurrences of the disease, which are quite possible.

[HUNT, as late as 1865, treats the matter of vegetable parasitic diseases of the skin very lightly, distrusting completely the agency of fungi in originating disease. The only disease in which he would yield that there might be a "peculiar character due to parasitic influence" is *favus*, but he finally says, with reference to a particular case: "That the growth produced irritation and inflammation in the skin is admitted, but the true pathology was a degenerate condition of the blood; and this is the origin of nearly every chronic affection of the skin." He further states: "The alleged parasitic affections are rarely, if ever—I should say *never*—cured by destroying the parasite; they *can* be cured by the due administration of appropriate alteratives and tonics."

WILSON still holds the parasite to be but a granular or phytiform degeneration of the epidermis, and, although prescribing the same local applications as those who consider the bodies of vegetable origin, he denies them any parasiticide action, and regards them only as topical stimulants; thus he uses juniper-tar and carbolic-acid soaps continually, also mercurial ointments, lotion of corrosive sublimate, sulphite of soda, etc. He says, moreover, that favus is not contagious; doubts seriously the contagion of herpes tonsurans, or *trichonosis tonsurans* in his language, and states the same of pityriasis versicolor. He embraces these four diseases—favus, trichonosis, sycosis, chloasma or pityriasis versicolor—in one class, however, which he names phytodermic affections, but, denying their mucedinous nature, says: "We maintain that the granular condition is the normal foetal structure of the young epidermal cell, and that the morbid condition in question is an arrest of development of these cells at their foetal stage, and the cause of their consequent modification of destiny, no longer to rise through those higher stages of animalization which culminate in the production of horn, but doomed in their crude condition to the lowest function which belongs to immature organic matter, namely, proliferation."

Space will not permit a discussion of this question, but I give the views of these two dermatologists of note for the sake of completeness, and because the opinions of those who are experienced must always demand serious and candid attention; the more so, as I quote from the eighth edition of HUNT's work and the sixth of WILSON's, which would show that these doctrines are widely disseminated, if not accepted.

But opposed to these views stand the vast array of dermatologists, of greater or less note, who quite as firmly believe the contrary, and whose convictions are based on large clinical and experimental research. I may say the matter is decided beyond doubt by the weight of evidence in favor of not only the existence of parasitical vegetable growths on the skin, but of their being *the true and indubitable causes of the diseases attributed to them*. The matter is well summed up in Appendix B, which I quote from TILBURY FOX.

This latter writer regards alopecia areata likewise as parasitic in its nature. Of these affections he makes ten distinct varieties:

- "1. Tinea favosa (commonly called favus).
2. Tinea tonsurans (ordinary ringworm of the scalp).
3. Tinea kerion (a modification of tinea tonsurans).
4. Tinea circinata (ordinary ringworm of the body).
5. Tinea sycosis (mentagra, or simply sycosis).
6. Tinea decalvans (area, or one form of alopecia).
7. Tinea versicolor (chloasma, or pityriasis versicolor).
8. Tinea tarsi.
9. Mycetoma, or the madura-foot of India.
10. Onychia parasitica, or onychomycosis; this occurs as the sole disease, or part of the other more common forms."

ANDERSON classes these maladies thus:

I. *Tinea favosa* (honeycomb ringworm). PARASITE, *Achorion Schönleinii*.

II. *Tinea trichophytina* (ringworm).

Varieties: *T. tonsurans* (ringworm of the head); *T. circinata* (ringworm of the body); *T. sycosis* (ringworm of the beard, etc.). PARASITE, *Tricophyton*.

III. *Tinea versicolor* (chloasma). PARASITE, *Microsporon furfur*.

IV. *Tinea* (?) *decalvans* (alopecia areata). PARASITE, *Microsporon Audouini* (?).

The adoption of the appellation "*Tinea*" for this class of affections appears good, and will probably stand.

As to the relations of the several fungi to one another, Fox believes they are of one and the same stock; ANDERSON holds to the contrary, and for his reasons I refer the reader to Appendix C.

Of other parasitic affections besides those given by our author, *tinea kerion* I have never seen, but give, in Appendix D, an account of it from WILSON, ANDERSON, and FOX.

Tinea tarsi, an inflammatory state of the Meibomian glands, is said to depend on the presence of the *tricophyton*.

Mycetoma, the fungous foot of India, is the result of a fungous penetration of the foot, also the hand, by the parasite *chionyphe Carteri*. The foot is swollen, and the surface knotty. It is stated that partial amputation and the use of acids or strong parasitocides are successful in arresting the disease. A fuller description, with illustration, will be found in Fox's work, also in BEALE ("*The Microscope in Medicine*").

Myringomycosis, or *otitis parasitica*, as GRUBER gives it, is the name given to the presence of the fungus *aspergillus nigricans* and *flavescens*, as also the *Graphium penicillioides* in the external ear. This was found by MAYER as early as 1844, and fully described by WREEDEN in 1868. The parasite is located deeply, and may exist for years without exciting any morbid phenomena (GRUBER). But this falls under the province of the aurist.

Mycosis vaginalis refers to a pruritus dependent upon the vegetation of a parasite upon the mucous membrane of the vagina. The fungus is either the *leptothrix vaginalis* or *oidium albicans*, and can be transferred from one person to another by means of vaginal examinations, and may even excite an affection of the nails in the obstetrician, i. e., the disease is contagious (HAUSSMANN). A weak solution of sulphate of copper will destroy the parasite and cure the disease.

Plica polonica, *Trichonosis plica*, *Polish Ringworm*.—I saw a number of cases of this state, falsely called a disease, in Vienna; it is nothing but a matted condition of the hair resulting from keeping the hair bound up in one position for a long time. The natural secretions, not being removed, are accumulated in quantity, and, having organic ingredients, readily undergo decomposition. This in turn irritates the scalp, an eczematous fluid is poured out, the hairs are glued together, and, when the patient realizes the

state of affairs, it is too late, for a separation and combing of the hairs are painful. Lice readily find their way into such localities; fungous elements, which otherwise would be removed by cleanliness, are nourished; and the whole hair may be felted together into one hard mass, resounding like a board when rapped upon—this I have seen HEBRA demonstrate repeatedly. This condition of the hair may be removed even when it is very far advanced—the hair may be softened with oil, and the individual hairs separated by careful and prolonged manipulation. Generally, however, the whole is removed with the scissors, by clipping the hairs beneath the mass close to the scalp—the whole has an exceedingly offensive smell. The often-resulting inflamed head is to be treated as an ordinary eczema.

With regard to the *treatment* of parasitic affections:

While many cases will yield at once, many will be found which will tax the patience and ingenuity of the physician to the utmost—the disease seeming to resist all treatment. Fox says, “If I want to cure a favus case, I epilate and apply my parasiticide myself;” he first uses hyposulphite of soda or sulphurous acid to soften the masses, and during the extraction of hairs applies the following:

| | |
|---------------------------------|---------------|
| R. Hydrarg. chlorid. corrosiv., | grs. x ad xx. |
| Boracis, | 3 j. |
| Aquæ, | ℥ ij ad iij |
| M. Ft. lotio. | |

The greatest strength given in the above solution I should hardly recommend; generally from two to four grains to the ounce suffice. HILLIER uses bichloride combined with the muriate of ammonia, of each, four grains to the ounce.

I much prefer the *sulphurous acid* to all other parasiticides. It should be diluted at first, but in most cases can be used full strength after a short time. As the active principle, the sulphurous-acid gas, is very volatile, it must be carefully protected against evaporation, and fresh supplies obtained from reliable sources very frequently. I generally order a number of half-ounce or ounce bottles at once, tightly corked, each being opened only as required. Hyposulphite of soda may be used effectively as a lotion (3 j ad ℥ j). I think there can be no doubt but that in most cases an internal tonic treatment will assist the cure of parasitic diseases, by placing the skin in a healthy state; and we know that the fungous plants do not thrive on perfectly vigorous skin.—L. D. B.]

APPENDIX A.

NOTE ON VACCINATION.*

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COW-POX, or VACCINIA (*vacca*, a cow), is a disease occasionally met with in milch-cows, and supposed to be a modified form of small-pox—at least, it is possible to produce it by inoculating cows with small-pox virus, and its lesion closely resembles that of small-pox. When it occurs without known origin, it is called *spontaneous* cow-pox; when it has been accidentally contracted, *casual* cow-pox; and, when intentionally transferred from one individual to another, *inoculated* cow-pox. Only the latter two forms occur in the human subject, and principally the inoculated form, such inoculation being now almost universally practised as a means of protection against small-pox, for which purpose it possesses two advantages over the obsolete practice of *variolation*, viz.: 1. That it is, practically, free from danger to the inoculated person; and, 2. That it cannot, under any circumstances, give rise to unmodified small-pox.

The lesion of vaccinia is a *pock*, closely resembling that of small-pox. It occurs, as a rule, only at the points of inoculation. After the inoculation, a period of inaction, comprising three or four days, is followed by a papule-like elevation of the skin, due to swelling of the cells of the deep layers of the epidermis, accompanied by hyperæmia; these cells continue to enlarge, and, by the fifth or sixth day, the pock is found augmented in size, and, from increased distention of the cells, presents the appearance of a vesicle, with a central depression, and is multilocular in structure. The contained fluid (*vaccine lymph*) is a colorless, adhesive liquid, containing leucocytes and minute granules, in which latter resides its virulent property. The papillary layer of the derma is now invaded by the morbid process; the free ends of the papillæ become strangulated by cell-impaction, and, melting down, mingle with the fluid contents of the pock. Oc-

* At the request of my friend Dr. Bulkley, I have prepared this note for his translation of Dr. Neumann's work. The necessity for brevity compels me to ask the reader's indulgence in regard to the dogmatic style of writing.—F. P. F.

asionally, the disease extends completely through the derma, and involves the subjacent cellular tissue, which then shares the fate of the destroyed papillæ. On the eighth day (inclusive) the pock has, if it have been produced by long-humanized virus, acquired its greatest size; if it have been produced by bovine virus, or by humanized virus of early removes, it continues to increase in size for several days longer. On the ninth day the pock has increased in plumpness, its central depression is more marked, a brown incrustation has begun at the centre, the fluid contents are more decidedly purulent, and the whole is surrounded by a sharply-defined, bright redness of the skin, extending over a disk of from one to two inches in radius, and technically called the *areola*. In the human subject the areola is usually accompanied by febrile reaction, but in the calf there is no areola, and but little, if any, constitutional reaction. The further progress of the disease consists in the gradual fading of the areola, with the transformation of the entire pock into a hard, dry, translucent brown crust, which separates, some time between the fifteenth and the thirty-second days, leaving a more or less depressed cicatrix, which is usually permanent, and which shows numerous lesser depressions, which give it the appearance termed *foveolation*. If the individual have previously had the disease, it usually runs a more rapid and less regular course, although the inflammatory element is apt to be more marked.

The inoculation of the disease is called *vaccination*, and is accomplished by causing the virulent product of the pock to be applied to an abraded surface. For this purpose, we use either the fluid lymph (which should always be taken on or before the eighth day) or the dry scab. The former is decidedly preferable. Where the confrontation of the person to be vaccinated (*vaccinee*) with the one furnishing the virus (*vaccinifer*) is convenient, the lymph may be directly transferred from the one to the other (*arm-to-arm* method). This method ought not to fail more than once in one hundred and fifty cases, but it is seldom practicable, and is, of all methods, the most likely, *cæteris paribus*, to involve the conveyance of syphilis. The lymph may be stored by allowing it to dry on slips of quill or ivory.* If these be kept dry and cool (below 60° Fahr.), they usually retain their efficiency unimpaired for two or three weeks, and should yield from 90 to 95 per cent. of successes, if of the humanized variety, and from 95 to 98 per cent., if bovine. Lymph may be kept in a fluid state between plates of glass, or in capillary glass tubes, and then suffers little or no impairment from ordinary temperatures, or the lapse of time. It will not, however, furnish results as satisfactory as those from the quill-slips, as regards the percentage of success. Crusts are also less reliable than dried lymph, and more apt to produce severe inflammation; they, however, preserve their efficiency for several months, if kept cool and strictly isolated from the air. The various sorts of stored vaccine are to be valued in the following order:

* Quill-slips should be preferred, as many practitioners would be sorely tempted to use an ivory one, "charged on both sides," upon a second patient—an uncleanly and somewhat dangerous proceeding.

1. Bovine quill-slips; 2. Humanized quill-slips; 3. Humanized crusts; 4. Bovine crusts; 5. Bovine tubes; 6. Humanized tubes.

There are various sorts of *bovine virus*, viz.: 1. From a spontaneous or a casual case of cow-pox (*primary vaccine*); 2. From a variolated cow (*variola vaccine*); 3. From a *retro-vaccinated* cow; i. e., a cow inoculated with humanized vaccine; 4. From an *equinated* cow; i. e., a cow inoculated with horse-pox; and, 5. From a cow inoculated with virus which has been propagated through cows from a spontaneous case. The last variety is thoroughly reliable, possesses certain advantages over humanized vaccine, and is altogether free from the acrimony and unreliability of most of the other forms. The advantages of bovine virus are: 1. A greater percentage of success; 2. A diminished risk of conveying syphilis; 3. A better-developed pock.

There are two principal methods of vaccination in common use, viz.: 1. By puncture; and, 2. By scarification. In the first method, an oblique puncture is made through the epidermis with the point of a lancet. Into this puncture the virus is inserted with the same instrument, if it be fluid; or, if it be dried lymph, the quill-slip (which should be pointed) is inserted, and allowed to remain for five or ten minutes. In the second method, a needle, or an instrument having a number of points, arranged like the teeth of a comb, is drawn across the skin several times, in cross directions, so as to make a scarification about a quarter of an inch in extent, which should be deep enough to cause a little blood to appear, but not deep enough to cause a *flow* of blood. If the virus be fluid, it is smeared over the patch; if dry, on a quill-slip (which should be square-cut); it is to be rubbed smartly upon the patch for about a minute, being previously moistened with water. A crust should be prepared for use by reducing a portion of it to powder, which is then to be made into a paste with water; but only so much of the crust as is needed for immediate use should be so treated. No plaster or other dressing should be applied to the puncture or scarification, but the part should be kept exposed to the air for ten or fifteen minutes, after which its usual covering may be replaced. If long-humanized virus be used, no fewer than four punctures, or three scarifications, should be made; with bovine virus, three punctures, or two scarifications, will produce an equivalent amount of vaccinal efflorescence. The *amount* of the efflorescence is of importance, as Mr. Marson has shown that the protection against small-pox is in direct proportion to it. As regards locality, if the child's mother or nurse is in the habit of carrying it upon *her* left arm, the child should be vaccinated upon *its* left arm, and *vice versa*. The particular points of vaccination should be, one at the insertion of the deltoid, and the others along the posterior border of that muscle, and they should be at least three-quarters of an inch distant from each other.

A child may be vaccinated with safety at almost any age, but, unless there be special danger of exposure to small-pox, the operation may conveniently be postponed until it is three months old, and it is desirable that the child should not be teething, or the subject of any disease, par-

ticularly disease of the skin. Vaccinia usually runs its course without complications, and does not call for treatment. Excessive erythema is best treated by the application of a liniment composed of ℥ij of ung. stramonii, 3j of liq. plumb. subacetat., and ℥ viij of linseed-oil (*New York Dispensary Pharmacopœia*). True erysipelas is very rarely caused by vaccination, and does not require a modified treatment. Axillary adenitis is common, and should be treated on general principles. The same is true of cellulitis. Ulceration of the pock (generally caused by violence) may be treated by sprinkling with equal parts of powdered starch and oxide of zinc, and the same may be used to check an immoderate flow of lymph, after opening the pock for the purpose of obtaining virus.

The conveyance of syphilis in vaccination may be certainly prevented by complying with *all* of the following rules: 1. Use only bovine virus, or humanized virus which is known to be free from syphilitic virus; 2. After once applying the lancet, or other instrument, to the "vaccinee," it should on no account be again applied to the vaccinator, or any other person, until it has been *thoroughly* cleansed; 3. After once using a quill-slip, throw it away.

Vaccination *generally* confers complete and lasting protection against small-pox; any person may, however, constitute an exception. Hence, every individual should be revaccinated as often as once in five years, and whenever small-pox is present as an epidemic, or upon setting out on a voyage, or when about to undertake military duty. As a rule, revaccination succeeds. It should be carefully done, and repeated if unsuccessful.

APPENDIX B.

NOTE ON THE VEGETABLE NATURE OF PARASITES.

TILBURY FOX gives the following excellent summary of the proofs of the vegetable nature of the fungi, which WILSON still ("*Lectures on Dermatology*," 1871) considers to be a *granular or phytiform degeneration* of the epidermal cells:

"*Firstly*.—The growth and independent life of the cell-structures (fungi), when removed from the presence and influence of all living animal structures. I have over and over again made the elements of these cryptogams to vegetate freely in preparations put up for the purpose, and it has become a familiar experiment with me, although the failures—as one might expect—are in the great majority.

"*Secondly*.—The peculiar action of reagents, and especially liquor potassæ. As far as I know, there is no animal structure that resists the action of this reagent in the same way that spores, sporules, and mycelia do; they remain practically unchanged, and do not swell up and become indistinct, as is the case with the other structures. Iodine, again, detects

the presence of the primordial utricle. Other behaviors might be mentioned, but I pass to—

“*Thirdly.*—The fact of the presence of *identical* parasitic forms in the hard structures of animals, and, indeed, vegetables, where no (epithelial) cell-structures of animal nature exist whence the vegetable elements could spring. In bivalves, in corals, foraminifera, and a host of others, as shown by MÜLLER, CLARPEDE, ROSE, KÖLLIKER, and many more. The examples in the vegetable kingdom need not be detailed.

“*Fourthly.*—The want of transitional forms. You cannot trace any connecting links between the fungi forms and the normal structures.

“*Fifthly.*—The fungus-elements are at first visible at the upper part of the hair-follicle, and migrate from above downward toward the papilla and root; in other words, there is *a priori* evidence that the germs of the parasite are derived *ab externo*, and this is proved to be the fact by clinical demonstration. If the so-called fungus is a granular degeneration, such degeneration must commence where the nuclei are formed, and be abundant in the early developmental stages—viz., at the formative point or papilla. Such is not the case. The earliest trace of spore, sporule, or mycelium, is sub-epidermic, and located just at the upper part of the follicle; from thence the parasite may be traced downward to the bottom, whence it finds its way to the interior of the hair.

“*Sixthly.*—The results of treatment. Remove or destroy every vestige of the parasite, in the early stage particularly, and the disease is stopped. To affirm that this could alter such a thing as ‘granular degeneration’ is not conceivable. Pluck out a diseased hair; if no spore is left behind, the hair is healthily formed at once. Besides, there is no confirmation in the character of concomitants. The cells at the root of the hair are healthily formed until the spores increase largely, or specially invade the papilla. There are no transitions. There are healthy structures in contrast with the fungus-elements, until the formative apparatus is attacked. The mere plucking out of a hair could not so alter the whole character of the nutrition as to bring back a disease (granular degeneration) abruptly into a state of health. The cause of the cell-alteration is clearly not in the cell-formation primarily, but due to some superadded influence which acts from without upon the cell-nutrition.”

APPENDIX C.

NOTE ON THE INTER-RELATIONS OF THE MICROSCOPIC FUNGI.

ANDERSON (“*Parasitic Affections*,” 1868) believes strongly in the non-identity of the parasitic fungi occurring on the human skin. He leaves out of account alopecia areata, or *tinea decalvans*, as he styles it, on account of the doubt as to whether it is a parasitic disease or not, and says:

“The following is a summary of the proofs adduced in favor of the non-

identity of the *achorion Schönleinii*, the *trichophyton*, and the *microsporon furfur*, the parasites met with in *tinea favosa*, *tinea trichophytina*, and *tinea versicolor*, respectively :

"1. In all cases of successful inoculation with the *achorion*, *trichophyton*, and *microsporon furfur*, the same parasitic disease has been produced as that from which the parasite was taken.

"2. Of the innumerable cases occurring in the human subject illustrative of the contagious nature of *tinea favosa*, *tonsurans*, and *versicolor*, which have been recorded, there is no authentic case (if we except HUTCHINSON'S, above referred to) in which one of these diseases gave rise to one of the others.

"3. The difference in the appearance of the eruptions, when fully developed, is so very striking as to lead to the belief that they are produced by separate parasites.

"4. There is no authentic instance on record of the transition of one of these diseases into one of the others.

"5. The difference in the appearance of the *achorion*, *trichophyton*, and *microsporon furfur*, is sufficiently striking to enable the observer, in many cases, to form a correct diagnosis from the microscopic examination alone.

"6. Of the numerous instances on record of the transmission of *tinea favosa* and *tinea trichophytina* from the lower animals by contagion or inoculation, favus has always given rise to favus, and *tinea trichophytina* to *tinea trichophytina*."

APPENDIX D.

NOTE ON KERION.

WILSON and FOX have made a separate disease of *kerion*, or *tinea kerion*, as the latter designates it. It is in reality but a more advanced or certainly a more inflammatory stage of herpes tonsurans, as ANDERSON gives it. These authors apply the term to a condition quite similar to that given in the description, by CELSUS, of a disease of that name; the affection consists of large or small patches of "a deep-red or purplish color, more or less tumefied, sometimes nearly flat, and sometimes prominent and studded with yellow points corresponding to the apertures of the hair-follicles, and containing a yellowish-white pus." The disease is said to occur suddenly, the patch becoming bare in a very short space of time, so that it is first noticed by this peculiarity; hence, WILSON states, the appellation *scalled head*. ANDERSON does not mention this. A glutinous, honey-like fluid exudes which may cause the hairs to adhere to each other, and the glands of the neck enlarge; the patches feel soft and boggy.

WILSON groups this with trichonosis tonsurans and favus, while FOX and ANDERSON are positive as to its parasitic nature.

The *treatment* consists in epilation, which itself will remove much of the disease, and the application of mild parasitocides, as carbolic acid or bichloride of mercury lotions. The tumors, which ANDERSON likens to those of sycosis, should not be incised, and therefore care must be taken to distinguish them from subcutaneous abscesses. Left to itself, kerion is said never to suppurate. May this not be the same state as in the parasitic sycosis—the pathology of both being an extension of the fungous vegetation into the sebaceous glands, causing them to inflame and pour out the peculiarly viscid secretion which we can readily conceive to be the product of cells accustomed to elaborate sebum?—L. D. B.

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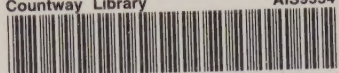
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